

DYNAMIC SCORING: HOW WILL IT AFFECT FISCAL POLICYMAKING?

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TUESDAY, JULY 28, 2015

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, DC.

The Committee met, pursuant to call, at 2:02 p.m. in Room 216 of the Hart Senate Office Building, the Honorable Dan Coats, Chairman, and Kevin Brady, Vice Chairman, presiding.

Representatives present: Brady, Paulsen, Hanna, Schweikert, Grothman, Maloney, Delaney, and Beyer.

Senators present: Coats, Cruz, Cassidy, Klobuchar, and Peters.

Staff present: Cary Elliott, Connie Foster, Harry Gural, Colleen Healy, Jason Kanter, David Logan, Kristine Michalson, Viraj Mirani, Thomas Nicholas, Aaron Smith, Sue Sweet, and Phoebe Wong.

OPENING STATEMENT OF HON. DANIEL COATS, CHAIRMAN, A U.S. SENATOR FROM INDIANA

Chairman Coats. The Committee will come to order. Members will be joining us. We are just finishing up on our caucus luncheons, and I am told the House has some votes but they will be drifting in also.

We want to start. We have got a terrific panel in front of us, and we want to welcome our witnesses, including my former colleague and very good friend, Former Senator Phil Gramm, who I am not used to seeing on the other side of this dias. But I thank all of our witnesses for being here today to discuss the concept of dynamic scoring, a topic that has been much debated since the House passed a rule earlier this year requiring the Congressional Budget Office and the Joint Committee on Taxation to use dynamic scoring when evaluating, “major legislation.”

The Joint Committee on Taxation and Congressional Budget Office have long provided lawmakers with estimates of spending and revenue changes that would occur should a bill become law.

For decades, however, these scores, as they are known, have largely ignored the largest driver of surpluses and deficits: economic growth.

That is because the current method of estimation, known as “static scoring,” does not reflect the reality that the economy can grow or contract as a result of public policy. Most notably, it does not account for the massive effects a policy can have on labor supply or private investment, two of the largest drivers of the U.S. economy.

Ignoring these effects leaves lawmakers unable to debate legislation with all available information at their disposal.

While dynamic scoring has been debated for decades, it is no longer as it has been previously described, “voodoo economics.” In fact, advances in computer technology and economics have finally brought us from the question of “Can dynamic scoring be done?” to the answer of “Yes, and here’s how.”

We have the rare opportunity today to hear from those who have been in the trenches of this debate as lawmakers, Congressional staffers, and academics.

I would like now—well, I was going to recognize Ranking Member Maloney for her opening statement, but let me turn to the brief introduction of our witnesses today.

We are really privileged to have people here who have long-time experience, and we are really looking forward to hearing what their thoughts are as we go forward with the enormous impact for decisions lawmakers have to make if we get this right.

Senator Gramm served 6 years in the U.S. House of Representatives, and 18 years in the United States Senate. His legislative record includes landmark bills like the Gramm-Latta budget, which reduced federal spending, rebuilt national defense, and mandated the Reagan tax cut. And, the Gramm-Rudman Act which placed the first binding constraints on federal spending.

As Chairman of the Banking Committee, Senator Gramm steered legislation modernizing banking, insurance, and securities law which had been languishing in Congress for 60 years.

Those are but a few of the many substantive issues and reforms that Senator Gramm introduced and brilliantly managed to complete in his 24 years of service in both the House of Representatives and the U.S. Senate.

Dr. Kevin Hassett is the State Farm James Q. Wilson Chair in American Politics and culture, and Director of Economic Policy Studies at the American Enterprise Institute. Before joining AEI, Dr. Hassett was a senior economist at the Board of Governors of the Federal Reserve System, and an Associate Professor of Economics and Finance at Columbia Business School in New York.

Dr. John Diamond is the Edward A. and Hermena Hancock Kelly Fellow in Public Finance—boy, this is a mouthful here—at the Baker Institute, Adjunct Professor of Economics at Rice University, and CEO of Tax Policy Advisors LLC. His current research focuses on the economic effects of corporate tax reform, the economic and distributional effects of fundamental tax reform in individual portfolio allocation in the 2000s, and various other tax policy issues. He is co-author of “The Fundamental Tax Reform: Issues, Choices, and Implications,” a former editor for the National Tax Journal, and has served as staff on the Joint Committee on Taxation from 2000 to 2004. So welcome back, and sitting—there you are—sitting at the table, rather than back here.

And finally, John Buckley has advised senior members of Congress on tax legislation, and written extensively on the subject. His career as a Congressional staffer spanned over 35 years, most recently serving as Chief Democrat Tax Counsel for the House Ways and Means Committee until his retirement in 2010. He also served as Chief of Staff of the Joint Committee on Taxation; and before

that, Assistant Legislative Counsel on the House Legislative Counsel's office. Off the Hill he has been an Adjunct Professor at Georgetown University Law Center for the last several years.

You know, I might take a little liberty here, Dr. Cassidy, if there are a few opening remarks you want to make, I am happy to do that. Otherwise, we will turn to our witnesses.

Dr. Cassidy. I am ready for the witnesses.

Chairman Coats. All right. Senator Gramm, you are on.

[The prepared statement of Chairman Coats appears in the Submissions for the Record on page 32.]

STATEMENT OF HON. PHIL GRAMM, Ph.D., FORMER CHAIRMAN OF THE U.S. SENATE COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS; SENIOR ADVISOR, U.S. POLICY METRICS, WASHINGTON, DC

Dr. Gramm. Well, Mr. Chairman, first I am very happy to be here. I am especially honored to testify before your committee. We served for many years in the Senate together, and I appreciate you affording me this opportunity.

I also need to mention that the Vice Chairman of the Committee, Kevin Brady, is an old friend of mine from Texas.

Let me say that when I was in Congress I spent a lot of time working on issues related to the economy and the budget. And there may be people who have looked at more budget numbers than me, and I am sure there are people who have looked at them with a larger knowledge base than me, but I paid very close attention to budgets when I was a Member of the House and the Senate.

The one thing that I discovered that is irrefutable is that the general condition of the economy overwhelms everything else. Over and over again if you study these budget numbers, you've got to conclude that we take actions to raise taxes, to cut taxes, to increase spending, to reduce spending and almost every member argues for every program they are for that it is going to be good for the economy. But the bottom line is, the changes in the economy swamp even the largest legislative change that we make.

So obviously one of the objectives that I have always felt that we needed to have was to find a way to take into account in some manner the impact of our proposed policy changes on the economy because most of the things that we undertake we claim that we are trying to benefit the economy, whether it is an increase in expenditures on some government program, or whether it is cutting taxes, the objective that is presented in the debate is almost always: this is going to be good for the American economy, good for working people. And yet we, for all practical purposes, have had no consistent ability to make even a broad estimate of what the impact was going to be.

It seems to me that there are three conditions that ought to be met for using dynamic scoring. And let me make it clear, I am not talking about dynamic scoring as a substitute for static scoring.

I think we do an excellent job in static scoring. I think the Congressional Budget Office and the Joint Tax Committee have gotten better and better at it, but I see it as a supplement to static scoring because only when we bring the two together can we look at the cost and benefits of various policies.

So what are the three conditions that I believe should exist for you to use dynamic scoring?

First, I think you have got to have a clear and consistent economic theory that the policy is going to have a substantial economic impact.

Secondly, you have got to have some evidence that it is going to have an impact within the period that you are writing the budget for, which is generally 10 years or less.

And finally, you need a base of information that shows that in the past similar policies have produced empirical evidence that would substantiate the claim that you are trying to make about dynamic scoring.

I think probably one thing we would all agree on here, no matter what our view is, is that the burden of proof ought to fall on people that are arguing that we should use dynamic scoring. Let me talk very briefly about two cases.

I want to talk about the Republican and President Clinton's bipartisan agreement to balance the budget, cut the capital gains tax rate, and increase the family tax credit.

The argument here is that the evidence is overwhelming. You had an estimate by the Congressional Budget Office for the five years after the proposal went into effect. When the five years had ended, we had actually seen GDP go up by \$2.4 trillion above the CBO projection. That would be \$4.7 trillion today.

It made up \$8,609 over the five-year period for every man, woman, and child in America. This was a significant policy change. And revenues rose by over a trillion dollars during this period. And so I think the evidence is pretty strong that any effort to control spending as a means to balance the budget, especially if it entails long-term policy changes like entitlement reform, should be scored dynamically, and based on the evidence of the Clinton era the scoring should be substantial.

Finally, I think there is strong evidence to substantiate the claim that a revenue-neutral tax reform proposal, if it lowers marginal rates and eliminates inefficiency in the system by the elimination of deductions and subsidies, that there is evidence that that has produced strong economic results.

Everybody forgets that by 1988, when the full rate reductions of tax reform kicked in, we were deep into the recovery. It was already one of the longest recoveries of the post-war era, and a third longer than the average recovery had been in the post-war period. And yet, GDP grew by \$1 trillion during the first two years after the full tax cut.

GDP went up by over \$1,100 per person, and taxes rose by what today would be about \$80 billion a year. So I think there is evidence in these two bipartisan cases that dramatic action on the deficit, or a revenue-neutral tax reform if it substantially lowers rates and makes the system more efficient, that in those two cases that we should strongly look at dynamic scoring.

[The prepared statement of Dr. Gramm appears in the Submissions for the Record on page 38.]

Chairman Coats. Senator Gramm, thank you.

Dr. Hassett.

STATEMENT OF DR. KEVIN A. HASSETT, DIRECTOR OF ECONOMIC POLICY STUDIES, AMERICAN ENTERPRISE INSTITUTE, WASHINGTON, DC

Dr. Hassett. Thank you, Mr. Chairman, and Members of the Committee.

My written testimony, which I guess is perhaps way too long, discusses the likely scale of economic impact of a significant tax reform, and gives actually some mathematical analysis of how wrong a static score can be, and for a typical capital income tax reform I discuss evidence that we could expect the static score to be off by about a factor of two.

And so then the question is: Should we adopt dynamic scoring as part of the budget and fiscal policy process? And in the rest of my testimony I discuss those issues, and that is what I will focus on in my oral remarks.

Dynamic scoring is not an unprecedented move for the government. Many branches of government must make forecasts in order to fulfill their statutory mandates. Even those forecasts are by their nature uncertain.

The Federal Reserve, for instance, must formulate monetary policy in the face of macro economic conditions that remain uncertain in perpetuity, albeit to varying degrees. Its members regularly document their own forecasts, and Federal Reserve policy is set with an eye toward the impact that interest rate changes would have on the economy.

The reliance of the Federal Reserve on economic models to set monetary policy is not controversial, nor a partisan issue. The absence of controversy regarding that reliance reveals a logical problem facing those who would dispute the usefulness of dynamic scoring for fiscal policy. For example, many tax reforms influence the economy by changing the cost of capital, a variable that depends on expected tax rates, depreciation rates, inflation, and the interest rate.

The Fed tracks the economic impact of interest rate changes in part through the model of the cost of capital which influences business investments and other decisions.

An identical change in the cost of capital can be generated either through a change in the interest rate or through a change in tax rates. The argument that it is acceptable to model the effects of an interest rate change in one quarter of the government with such a model but not to model the effects of the tax rate change in another corner of the government strikes me as simply illogical.

Though the context of dynamic scoring and the context of monetary policy certainly are very different, in both cases the proper responses for the forecast incorporate a nonpartisan staff's best judgment of what the economic analysis shows.

The uncertainty economists face when evaluating fiscal policy is not greater than the uncertainty that they face when evaluating monetary policy. If we use models for one application, we can use models for both.

As does the Fed in its analysis of economic conditions, so should the staff of the Joint Tax Committee and others tasked with dynamic scoring proposals incorporate sensitivity analysis, a range of perspectives, and the best thinking of the academic community.

If there are many available models for a specific question, the staff should evaluate the broad range of them and then come to a considered judgment regarding the relative weights of the different results.

It is worth underscoring that this leaves discretion in the hands of the Joint Tax Committee staff, rather than any one model, in recognition of the necessity of human judgment in formulating views based on economic models, rather than giving one specific model the final word.

The last part of my testimony highlights a recent development that is at a pretty advanced stage at the American Enterprise Institute where we've thought very long and hard about what it will take for dynamic scoring to be widely accepted and also fully transparent.

And we have set up something that we call the "Open Source Policy Center" where we have developed two types of models. One is the type of model that draws on individual income tax data and scores tax proposals on a static basis in a way that is very, very similar to the types of scores that you get from the Joint Tax Committee now.

And second, in collaboration with the BYU Macroeconomics and Computational Laboratory and professors from BYU and MTSU, we have developed a dynamic model of the economy which we have bridged to the static model, and we have got a number of collaborators all around the country and data users that are already using these models.

They are fully open source, and every single assumption that anyone could make can be tested and sensitivity analysis can be performed.

It is our view that as we move toward dynamic scoring that what we need to do is think of ways that we can take the academic community and connect them to the policy community in a fully transparent way. And at AEI we have made a large commitment over the last few years to develop a fully open source model that can be accessed by Congressional staffers and even members themselves. We have got a Web interface to make it easy to use.

We hope that the OSPC, the Open Source Policy Center, evinces a level of transparency and technical rigor that serves as an example for how dynamic scoring should proceed going forward.

I think that it can be extremely productive to help us think about policy if we see what the Joint Tax Committee or the CBO's judgment about what the dynamic score is, and we know why they made the judgment that they did, and we can test our own judgment against it.

Congress and the United States would benefit more generally from dynamic scoring. Much work remains to be done in fleshing out exactly how such a system of dynamic scoring is going to work in practice, but the obstacles to transitioning to a world where it is done are not insurmountable. In fact, there is no reason to delay the beginning of the implementation.

Thank you, Senator.

[The prepared statement of Dr. Hassett appears in the Submissions for the Record on page 40.]

Chairman Coats. Dr. Hassett, thank you.

Dr. Diamond.

STATEMENT OF DR. JOHN W. DIAMOND, EDWARD A. AND HERMENA HANCOCK KELLY FELLOW IN PUBLIC FINANCE, BAKER INSTITUTE OF PUBLIC POLICY, RICE UNIVERSITY, HOUSTON, TX

Dr. Diamond. Chairman Coats, Ranking Member Maloney, and Members of the Committee, thank you for inviting me to present my views on the importance of dynamic analysis and dynamic scoring.

Let me begin by reviewing the most recent budget projections. CBO projects that under the extended baseline by 2040 revenues will be 19.4 percent of GDP, as opposed to 17.4 percent over the last 40 years; while spending will increase to 25.3 percent of GDP, as opposed to 20.1 percent over the last 40 years.

Clearly we have a spending problem. This implies that in 2040 the deficit would be 5.9 percent of GDP, and the federal debt would be 103 percent of GDP. But this projection is far from certain.

Under CBO's alternative fiscal scenario, the federal debt is projected to reach 175 percent of GDP by 2040. There is also uncertainty regarding behavioral parameters and the underlying economic variables used in the projections.

In addition, there is uncertainty related to the economic effects of enacting new policies. For example, CBO estimates that including the macro economic effects of higher marginal tax rates, larger deficits, larger transfer payments, and increased federal investment would increase the projected deficits in 2040 from 5.9 to 6.6 percent.

Currently, the economic effects of enacting new policies is not considered in the budget process, even though other assumptions in use create more uncertainty.

Why should we use dynamic analysis? Let me propose an example. Consider two proposals. The first raises \$200 billion in revenue by taxing capital gains and dividends and increases tax expenditures by \$200 billion by expanding child credits.

The second proposal would raise \$200 billion in revenue by reducing child tax credits and reduce revenues by \$200 billion by lowering the capital gains and dividend tax rates. The conventional estimates would view these two proposals as roughly equivalent. However, analyses by JCT, the Office of Tax Analysis, the OECD and myself and Alan Viard, clearly show that the first proposal would decrease economic growth and increase the deficits, while the second would increase economic growth and lead to deficit reduction.

It is important that we account for these differences in the policymaking process. There are several important issues regarding how to implement dynamic analysis to improve the budget process.

While providing a dynamic score is important, the primary goal of dynamic analysis should be to compare the macro economic effects of various provisions. And while examining every provision on its own would be impossible—we do not have enough time nor the resources on the staff—there are times when it makes sense to examine a single provision.

For example, JCT recently provided a dynamic analysis of the effects of permanently extending 50 percent bonus depreciation and found that it would increase GDP by 0.2 percent over the budget window.

Another interesting study may be a look at a temporary extension of bonus depreciation and a comparison of those two policies. We must analyze proposals not only with positive effects, or ones that we expect to have positive effects, but we also need to analyze proposals that we expect to have negative economic effects.

Identifying harmful proposals is just as important as identifying proposals that increase economic growth. Dynamic analysis should also examine the effects of related provisions separately for large policy reforms.

For the BRT I examined the Tax Reform Act of 2014. It would have been very interesting to split that analysis into three separate analyses: one of corporate tax reform; one of a move to a territorial system; and one of the effects of the individual income tax reforms in that legislation.

Finally, let me just say that we need to include the debt service cost in both the short and long run, that those effects must be considered when we're looking at analyses of tax and spending proposals.

It is also important to note that the macro economic aggregates are not the only information that we should provide to policy-makers. Some measure of welfare is also important, or a measure of the changes in distributional effects.

Finally, public disclosure is imperative and as much information as possible should be released to the public. At a minimum, enough information should be released so that outside entities could replicate the work.

While dynamic analysis will provide valuable information about the relative economic effects of alternative policies, it will not solve the fiscal crisis facing the United States. Policymakers will still face many tough decisions in the years ahead.

Thank you.

[The prepared statement of Dr. Diamond appears in the Submissions for the Record on page 49.]

Chairman Coats. Thank you.

And, Mr. Buckley.

**STATEMENT OF JOHN L. BUCKLEY, FORMER CHIEF OF STAFF
TO THE JOINT COMMITTEE ON TAXATION, WASHINGTON, DC**

Mr. Buckley. Thank you, Mr. Chairman and Ranking Member Maloney for the opportunity to participate in your hearing today.

I understand that the decision to use dynamic scoring has largely been made by the Congress, but I believe there are still issues remaining with respect to its implementation and the interpretation of its results.

First, I think that the current state of the art when it comes to macro economic analysis of changes in federal fiscal policy simply does not provide the level of certainty or consistency that is required in an official budget score.

For example, the Joint Committee on Taxation and the Congressional Budget Office do not have common approaches to the issue

of dynamic scoring. Since both use different models and different sets of assumptions, the same proposal could receive dramatically different budget scores depending on which entity did the scoring.

Also, it does not provide the consistency that Professor Diamond suggests is necessary to compare competing proposals because the difference in the score may only reflect which entity is scoring the proposal.

Second, there are some models that I think are simply unacceptable for being used in dynamic scoring. Those models are called "Forward-Looking Models."

They are also the models that typically produce the greatest growth effect. Those models have as an underlying assumption that the Congress will enact deficit reduction legislation in the future necessary to solve the budget problem that Professor Diamond so accurately described.

I simply believe you cannot have the official budget score of a piece of legislation dependent on the assumption that Congress will do in the future what it is unwilling to do today—and that is, to enact major deficit reduction legislation.

Also, you cannot have the Congressional staff making predictions of what you might do in the future on deficit reduction. So those types of models I think you just have to set aside and not use for dynamic scoring.

Also, I think you need to understand that all of these macro economic models are mathematical formulas. They do not attempt to measure the impact of the tax policy on our actual economy, or based on actual human behavior. That would be far too complex to measure to reflect in a mathematical formula, no matter how complicated the formula would be.

Therefore, they measure the impact against a hypothetical economy constructed through assumptions that are often counter-factual in the sense that they are contrary to observable facts.

Also, the basic theory in the models assumes that increases in labor supply or capital, the factors of production, will automatically translate into greater economic growth.

I think you have to question that theory. For example, I think a simple question is: What is the biggest economic challenge faced by this country?

Is it lack of job opportunities that could support a middle-class family?

Or is it the fact that we have too few people looking for work?

Now I know what I think is the answer to that question. It is lack of job opportunities. Yet the models assume it is the lack of people looking for work which is the economic problem we are facing. They solve the issue of unemployment, or underemployment simply by assuming that it does not exist.

Finally, Mr. Chairman, during the period after 1980 and before 2009, we essentially ran a series of experiments on the theories underlying the dynamic scoring models.

With one exception, the rate increases enacted in 1993, almost all major tax legislation was consistent with the theories that underlie these economic models. Essentially, there was a real-life experiment whether those theories were correct. The results proved that they were not.

The large marginal rate reductions were supposed to increase savings. The savings rate declined precipitously. The 1993 tax increases were supposed to reduce labor supply. Labor supply grew after those tax increases and reached a record in 2000.

The 2001 rate reductions were supposed to increase labor supply. Labor supply began to decline.

So there is a long history here that I think the Committee has to take into account and should discuss the basic underlying premises of these models.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Buckley appears in the Submissions for the Record on page 60.]

Chairman Coats. Well thank you to our witnesses. A number of questions have been raised here that I look forward to having a discussion on.

I deeply regret that I have a conflict with the Intelligence Committee briefing us on the Iranian Agreement that I need to go to. So I am going to turn over the gavel to Vice Chairman Brady in just a moment.

I first want to recognize Chairwoman Maloney, the Ranking Member on the House side. I was hoping to delve into the relationship of monetary changes enacted by the Fed in terms of how that might affect the dynamic scoring model.

As we know, that information in terms of what the Fed may be thinking and doing would not be available to us in terms of going forward. We can take some guesses, but I would hope someone would get into that answer. I wish I could be here. I apologize for having to do double duty here.

But let me ask Congresswoman Maloney to give her opening statement, and then I will turn it over to Vice Chairman Brady for his statement, and then we will go to the questions.

**OPENING STATEMENT OF HON. CAROLYN B. MALONEY,
RANKING MEMBER, A U.S. REPRESENTATIVE FROM NEW YORK**

Representative Maloney. Thank you so much, Mr. Chairman, and thank all of the panelists. Last month this committee held a hearing on so-called "fair value" accounting, a method of calculating the impact of federal lending programs that will make them appear more expensive.

Today the Committee turns its attention to dynamic scoring, a method of analyzing and quantifying the budgetary impact of tax cuts that will make them appear less expensive.

Both methods are very problematic and in both cases they change the rules of the game so my Republican colleagues can get the results that they want. Dynamic scoring has been conservatives' Holy Grail for many years. This is because if tax cuts appear to cost less, it will be easier for Congress to pass more of them.

But there are serious problems with dynamic scoring. One problem is that it provides results that are highly uncertain, vary widely, and could be subject to manipulation. Let's take the example of former House Ways and Means Chair Dave Camp's tax reform legislation in the last Congress.

The JCT performed a dynamic analysis to see how much additional revenue the tax plan could return to the Treasury. And it is up on the screen right now. They used eight different models, and they came up with eight different answers, varying from \$50 billion to \$700 billion. The largest estimate was 14 times the size of the smallest estimate. And which estimate did Chairman Camp highlight? \$700 billion, the highest one. This leads to two more serious problems with dynamic scoring.

There is no consensus on which dynamic scoring model is the most appropriate. And the models rely on assumptions that are sometimes wildly unrealistic, as Mr. Buckley pointed out in his testimony.

For example, one dynamic scoring model assumes that if the debt increases as a share of the economy future Congresses will deal with the problem. The model assumes that in the future there will be no unemployment. The fact is that with dynamic scoring budget analysts will be forced to choose between deeply flawed models.

Former CBO Director Rudolph Penner has said that, and I quote, "Dynamic scoring would force analysts to make more judgment calls than they do today. Quality control would be difficult, and that implies a high risk that ideological biases will pollute the analysis." End quote.

There is yet another serious issue with dynamic scoring. New rules require a single estimate. Until now, the Joint Committee on Taxation and CBO have been required at the request of the Chairman of the Ways and Means Committee to provide a range of dynamic analysis estimates to reflect the different models and assumption choices. But the new rule passed by Congressional Republicans requires JCT and CBO to provide a single revenue projection, and the estimate is official, not advisory. The example of Dave Camp's bill shows that dynamic estimates for major tax bills can differ by hundreds of billions of dollars. If the Camp bill had become law and the \$700 billion figure proved wrong, deficits would explode.

Because the results are so unreliable, dynamic scoring will compromise the accuracy and integrity of the federal budgeting process. Former Federal Reserve Chairman Paul Volcker has said simply, and I quote, "I won't believe the numbers." End quote.

And what happens if the markets come to doubt the integrity of the scoring process? Former Federal Reserve Chairman Alan Greenspan has said that, and I quote, "Should financial markets lose confidence in the integrity of our budget scoring procedures, the rise in inflation premiums and interest rates could more than offset any statistical difference between so-called static and more dynamic scoring." End quote.

Republicans' decisions to use dynamic scoring, a highly unrealistic and deeply flawed method, may by itself have negative consequences that overwhelm whatever positive revenue effects that could be gained by cutting taxes.

There is still another problem with dynamic scoring as implemented by this Congress. It strongly biases policy towards tax cuts. The new rule applies dynamic scoring only to tax cuts, not to discretionary spending.

There is a broad consensus among mainstream economists that investments in infrastructure, education, and research and development can have a strong stimulative effect. But the new rules do not apply to discretionary spending.

For this reason, these investments will seem very expensive relative to tax cuts, and Congress will be more likely to cut them. But does this mean that we should apply dynamic scoring to discretionary spending proposals as well?

No. Because an accurate and impartial method of dynamic scoring remains far beyond the reach of economists and budget analysts. Until those models improve vastly, there is little justification for using dynamic scoring on either tax bills or spending bills.

The dynamic scoring rule serves only one purpose. It helps Republicans reach their Holy Grail, rigging the rules so it is easier for Congress to cut taxes.

Bruce Bartlett, former aide to President Reagan, put it this way: Dynamic scoring is, and I quote, "is not about honest revenue estimating, it's about smoke and mirrors to institutionalize ideology." End quote.

I look forward to our witnesses' testimony and answering of our questions. Thank you, and I yield back.

[The prepared statement of Representative Maloney appears in the Submissions for the Record on page 33.]

Vice Chairman Brady [presiding]. Thank you, Mrs. Maloney.

I want to thank each of the witnesses for being here today. For the sake of time, I have an opening statement that is so compelling it will bring you to tears, but . . .

[Laughter.]

For the sake of the hearing, I will just submit it for the record.

[The prepared statement of Vice Chairman Brady appears in the Submissions for the Record on page 32.]

And I will point out that I was involved for the past three years in Former Chairman Camp's tax draft proposal.

Now the reason there are a number of scoring elements is that the first five are the routine static scoring models that Joint Tax uses today, and in fact which our Democrat friends rely upon for all of their proposals and did so.

The last two are dynamic scoring models which were used to score the economic impacts of the Comprehensive Immigration Bill, which our Democrat friends as well held as gospel. What Chairman Camp was seeking to do was really use the range of models available to Joint Tax today, but the newer, more real-life models to try to estimate Chairman Camp's tax proposal.

Senator Gramm, you have obviously a key background in economics. You have sat where we've sat, a leader of key fiscal solutions on budget, on taxes, on financial services. We hope to move tax reform that is comprehensive, that creates lower corporate taxes, a territorial system, lowers the disincentives for work and savings and investing in the United States, and do so we hope over the next two years or so.

Sitting in our seats, you know, what is the single greatest benefit you believe policymakers can gain from dynamic scoring? Just how valuable is it to both sides as we weigh major fiscal issues such as tax reform?

Dr. Gramm. Well, Mr. Chairman, first of all I think it is unfortunate that the whole dynamic scoring debate is so focused just on tax cuts.

Dynamic scoring is about trying to take into account the impact of economic policy adopted by Congress on the economy, and on revenues, and on spending.

It is far more than just a debate about tax cuts. It is interesting, because Kevin made the point very convincingly to me that the Federal Reserve Bank relies on estimates every single day.

All of their policies are based on dynamic scoring as to what they are trying to achieve. So whatever Paul Volcker said, or Alan Greenspan said—and I respect both of them—every day they worked at the Federal Reserve Bank they were dealing with dynamic scoring in trying to implement monetary policy.

So the idea that we've got all these economists at the Fed—Kevin was there; they were better in those days—

[Laughter.]

And we have got all these economists that are scoring monetary policy that are looking at its impact on interest rates, and growth, and employment, all of which are estimates, all of which are imperfect, but they use it every single day and nobody says anything about it. Nobody seems to think it is unreasonable, but yet the idea that the Congress would do it when we are changing the policies of the country, I think that is an unreasonable position to take.

I think there are two cases where the empirical evidence is pretty overwhelming that government policies have in the past had some predictable impact on the economy and on revenues. And I think one of them is dramatic reductions in the federal deficit through spending control.

And I don't have any doubt whatsoever that a dramatic reform of entitlements that affected the long-term deficit position of the country would create incentives for people to invest because of enhanced confidence and to consume. So—and if you look at the Clinton–Republican Congress compromise, the five years that the program went into effect, it outperformed the economic impact estimated on a static basis by \$2.4 trillion in GDP, and \$1.1 trillion in tax collection.

I also think that the other case where the evidence is strong is on the bipartisan 1986 Tax Reform Act. We were way into the recovery. The economy was getting weaker. The Congressional Budget Office was projecting a decline in the growth rate. That tax reform gave a second wind to the economy and clearly its impact was positive and the country benefitted from it.

I think in those two cases, both of them were bipartisan efforts, that the case is pretty strong empirically for the use of dynamic scoring.

Vice Chairman Brady. Thank you, Senator. I am going to wrap up my time, except I want to, one, congratulate Dr. Hassett on the Open Source Model. I think it is critical for those who have ideas on how we become competitive and grow this economy to have models, to be able to plug those ideas in to look at what that impact could be.

A quick question for both you and Dr. Diamond. You know, the biggest criticism is that dynamic scoring is simply not ready. That somehow the technology, economic knowhow simply are not there.

Senator Gramm made the point, you know, in the 1980s and the 1990s, static scoring missed it by a mile. And so can you point out to us what advances have occurred over the past two decades that make this more accurate in real-life for us?

Dr. Hassett. Thank you very much, Mr. Brady.

And, you know, there have been, and there constantly are advances in our ability to model. But I think it is very, very important to emphasize that as policymakers what you need to do at a moment in time is set policy based on what the best knowledge that we have is. That if we had perfect knowledge, then all economists could retire and it might be a perfect world with no economists, but we are going to constantly be learning things.

So the notion that we are going to learn more should not be an obstacle to using the best analysis that we have. And I can give an example. I actually agreed with a lot of your statement, Mrs. Maloney, and you raised some very important concerns.

But let's think about the eight different models. And I unfortunately did not see your slide ahead of time, but it looked like all of the estimates of the impact of the plan were that—were positive.

And so the notion that we have eight different models with lots of different assumptions that assume that this responds a lot, and that responds a little, and the other does the opposite, and no matter how you look at it if all the models are saying that there is a positive effect on growth, that the dynamic score is below the static score, then it just does not make sense to me to say that zero is the right answer.

And I envision a world where people that I have the highest regard for, like Tom Bartol or Doug Elmendorf, look at a vast amount of output. They look at the broad range of knowledge that we have, and they make a considered judgment about what the best answer is.

I absolutely share your concern that if a partisan person were to make that judgment, then people would stop trusting it. But I think that that is already a problem, right? So I think that we do trust what CBO and JCT do right now because they've got such a strong track record of hiring nonpartisan staff.

I do not think that allowing them to use their own economic expertise to improve their judgments is going to change that.

Vice Chairman Brady. Thank you.

Dr. Diamond.

Dr. Diamond. I am not sure there are really any advancements. What I would point to is just a fundamental misunderstanding of modeling by detractors of dynamic scoring, and Mr. Buckley just cited two of the most fundamental. Let's start with the forward looking assumption. Critics say, people cannot be forward looking, but I think we are all forward looking.

Do you think about your future? Do you think about what is going to happen in the future? I think we all do. So when we are modeling, we have a choice. Do we want a model that assumes people are forward looking? Yes, we know they are going to make mistakes. But on average, their mistakes will cancel out. Some people

will assume that wages will be higher, and some people will assume they will be lower, but on average the forward looking assumption implies that people do not make the same mistake. And they do not make the same mistake over and over and over.

The models Mr. Buckley would like to use, called myopic models, not only assume that people make the same mistake every year, year after year, forever; it assumes that everybody makes exactly the same mistake.

That is the worst model to use in many circumstances. And he claims that the reason we should not use the models is because the assumptions of forward looking models are unrealistic. But on the first day of Standard Principles of Economics, I always teach the same thing: Class, what we are going to learn is that simplifying assumptions are necessary, but they are not realistic.

What we need is a model that has predictive power, not a model that looks exactly like the real world. What we want is to predict things accurately.

Let's think about the most standard economic model. It assumes things such as perfect markets. Many buyers and sellers on both sides. Firms that sell perfectly identical products. No barriers to entry. These are unrealistic assumptions. Should we throw that model out? That model is the simple model of supply and demand. Basing arguments on assumptions you do not understand is not a good way to choose dynamic scoring models.

Vice Chairman Brady. Thank you, Dr. Diamond.

Vice Chairman Maloney, former Chairman.

Representative Maloney. Thank you so much, and I thank all of you for your comments. But I would like to ask Mr. Buckley, I would like to read a statement to you by Former Federal Reserve Chair Alan Greenspan, and I quote, "We should be especially cautious about adopting technical scoring procedures that might be susceptible to overly optimistic assessments of the budgetary consequences of fiscal actions." End quote.

So if we applied dynamic scoring to tax cuts, is there a risk that we could overestimate the government revenues?

Mr. Buckley.

Mr. Buckley. I believe there is. But let me first take the opportunity to respond a little bit to what Professor Diamond said.

My main objection to forward looking models is not assumptions of forward looking. It is that they require an assumption by the modeler that the Congress will enact deficit reduction legislation in the future.

They don't score the bill before you. They score the bill before you assuming that you will take action that as of yet no one has been willing to put forward.

But to answer your question, I think you should be conservative in budget estimates for the same reason that corporations are not permitted to take into account the benefits of their investments when reporting to shareholders. The temptation to be overly optimistic is a little too large.

Even with independent auditors, no matter how certain the corporation is that its investment will be quite profitable, it has to record that investment at cost and take into account the benefits

when they accrue. And I believe that is the conservative path that federal budgeting should also follow.

Representative Maloney. Okay, Dr. Diamond, would you like to respond to Mr. Buckley's observations?

Dr. Diamond. Yes, I would. The second argument is that the models are unreliable because they do not include rising debt levels that cause the economy to blow up. Let's start with one model that JCT uses. The MEG model assumes that Congress is going to do nothing and that you are going to let the U.S. turn into Greece.

That model is making an assumption; however, it is not a very likely assumption. Forward looking models assume that there is not a problem like in some of the conventional estimates.

But here's the key——

Representative Maloney. But if——

Dr. Diamond. If we use——

Representative Maloney. If I could respond really briefly because I have other questions, Mr. Buckley's point was that you are assuming that you are going to do deficit reduction, which I have not seen since I have been here, and that there will be no unemployment, when of course there is unemployment.

But I do have a question that I would like——

Dr. Diamond. But let me—the deficit——

Representative Maloney. May I ask a question about your report?

Dr. Diamond. Sure.

Representative Maloney. Your report on Chairman Camp's tax reform plan, and on page 14, in this report that you prepared for the Business Roundtable on the Camp Tax Reform Plan, you said something very important and something I think this Committee should listen to very carefully and very closely, and I would like your response to it.

You noted that results of any one model are, and I am quoting from you, that the results from any one model are, quote, "at best suggestive." End quote.

And what is the risk of basing revenue estimates on models that are at best suggestive? Is there a consensus among economists about which of these "at best suggestive" models to use?

Dr. Diamond. I still stand behind that statement. Dynamic analysis is at best suggestive. We can't produce a single number with perfect confidence. But, you know what, conventional analysis is at best suggestive.

Those numbers, as I highlighted in my opening testimony, are extremely uncertain. Let's go back to the idea that the problem is not forward looking models, but instead that forward looking models don't include an exploding deficit. Let me tell you why I do not include exploding deficits in my models—if I include an exploding deficit in the model, so that we let tax rates go from 17.4 in the model to 19.4, and we let spending go from 20.1 to 25.3, and we continue to let the model explode into the out-years, do you know what the effect would be on the estimates of the growth effects of a tax cut if the model started with much higher tax rates?

Standard economic theory says they would be much larger. If I start at a zero tax rate and I increased taxes by one dollar, the welfare effects are relatively small. If I started at a \$10 tax rate and

increased taxes by \$1, the growth effects could be a hundred times larger because it's the square of the tax rate that matters.

My assumption moderates the results. It does not produce larger results. It is a moderating assumption, and I know I am right.

Representative Maloney. Okay—

Dr. Diamond. As far as my comment that dynamic analysis is “at best suggestive,” all estimates are at best suggestive. That is why they are called estimates.

Representative Maloney. So, Mr. Buckley, what are your thoughts about using models that are, quote, “at best suggestive”?

Mr. Buckley. Well I think there is a real need for macro economic analysis in the development of legislation, and I would suggest both tax and spending legislation.

The Congress should be informed on the consequences of what they do. However, the best numbers are the broad range. That is what the Congressional Budget Office has said, that the best we can produce are broad ranges of estimates and you can judge.

But again, I think that for official budget scoring purposes you must score the bill before you and nothing else. You should not score the bill before you and the assumption that you will make major reductions in entitlement programs in the future. I like to think I have some political experience, as well. I doubt that many Members would want to endorse an economic plan the success of which was dependent on identified cuts in entitlement programs—otherwise known as Social Security and Medicare.

Representative Maloney. And, Mr. Buckley, forward looking models like Professor Diamond's are built on the core assumption that future Congresses won't allow increases in the deficit as a share of the economy. Is this a realistic assumption? And what are the implications of this?

Mr. Buckley. Well whether it is realistic or not, it is a tremendous breach from your current practices of scoring only the legislation in front of you. And I believe you should continue that.

The range of models results from Chairman Camp's bill that \$700 billion was the forward looking model, which assumed entitlement cuts.

Representative Maloney. And, you know, how do these assumptions affect the likely accuracy of the models? For example, the unemployment one, that in the future there is, quote, “no unemployment,” or in the future that they're going to cut, you know, the entitlements which has not really happened?

Mr. Buckley. You know, this is where I think the credibility of the numbers are at risk. And if the credibility is lost I think there are potential adverse consequences that could dwarf whatever the difference is between static and dynamic scoring.

Representative Maloney. My time has expired. Thank you.

Vice Chairman Brady. Thank you.

Senator Cassidy.

Senator Cassidy. Mr. Buckley, now Senator Gramm mentioned three criteria by which dynamic scoring should be judged: macro economic theory conforms—empirically it has previously worked; and that changes would accrue within the budget window of note.

Now do you disagree that that would be a reasonable—and the burden of proof is upon those who desire the dynamic scoring to

say that this is the case? Do you feel as if under that kind of guidelines dynamic scoring would not be helpful?

Mr. Buckley. You know, I don't disagree with Senator Gramm's outline. I might disagree with "empirical evidence." As I stated in my oral testimony—during the period between 1980 and 2009 there were a whole variety of tax bills enacted that were designed to increase savings and labor supply.

Under the standard economic theory reflected in these models, the dramatic reduction in marginal tax rates that occurred during that period of time and the broad expansion of savings incentives should have resulted in an increase in the individual savings rate. It did not.

The savings rate dropped precipitously from 1981 to 2007 before the recession. Also, the thought is that labor supply responds to increases or decreases in tax rates, the 1993 tax increase in marginal rates was followed by a slow increase in labor force participation rates.

Senator Cassidy. Now that—now, again, I feel like I am speaking in front of folks who have fought these battles personally, so, Senator Gramm, you had mentioned that in particular, I think 1993 actually did achieve some degree of entitlement reform with decreased deficit, and that was one of the preconditions that you labeled would lead to an expansion—i.e., a justification for dynamic scoring.

Do I understand that correctly?

Dr. Gramm. (Off microphone.)

Senator Cassidy. Your microphone, please.

Vice Chairman Brady. If you could get that microphone—

Dr. Gramm. Maybe I will do that. I want to be heard.

[Laughter.]

The economic growth rate was soft in the first two Clinton years. Positive, but soft. The dramatic change came with the bipartisan budget agreement and a reduction in the capital gains tax and the child tax credit. And it was dramatic. Even Clinton's budget before the balanced budget agreement was projecting \$100- to \$200 billion deficit until Jesus came back. But what happened was that by actually taking action on a bipartisan basis that was credible—and people keep talking about, well, you can't score based on what Congress might do? I never heard of anybody propose that you do that.

Anybody that would do that is a moron, because Congress talks and doesn't act. But when Congress did act, when you had an Administration and a Congress committed to a policy of controlling spending, you had dramatic economic results.

And the boom of the Clinton years occurred after that program was adopted. And just to go back and make one other point. Dynamic scoring as we're calling it, which means using the best information available which may not be very good but it's the best available, is done everywhere except here.

It is used in the private sector. It is used at the Federal Reserve Bank every single day. Everything they operate on is dynamic scoring. How can it make sense for them to do it and you not to do it?

And finally, I believe there are some cases where you can make convincing arguments—and they're not all related to tax cuts. I

think part of why everybody's talking past each other is that this subject has become a surrogate for tax changes. But dynamic scoring is not just about taxes. It is about spending. It is about policy. It is about regulation. And the idea that we ought to just completely write it off because we are not perfect at it just violates every principle we see in the world around us.

Every day we do the best we can with what we have. It is not perfect, and probably never will be.

Senator Cassidy. Okay, thank you all. I yield back.

Vice Chairman Brady. Thank you.

Senator Klobuchar.

Senator Klobuchar. Thank you very much, Mr. Chairman. Thank you to all of you. Especially welcome back, Senator Gramm. I never got to serve with you, but thank you for being here.

I was focused on this just from some of the things that we are working on right now in the Senate. We are of course working—we are debating the Long Term Transportation Bill, the Drive Act. I have been a supporter of that nearly from the beginning because it is a six-year bill with three years paid for.

And I was wondering how you see a bill like that, which is just set pay-fors. Dynamic scoring would change the way we would look at that bill.

And then secondly, another thing that we've been looking for in the long haul, which is paying for infrastructure. And Congressman Delaney, who is a member of this Committee, has a similar proposal to Senator Warner's is looking at long-term tax reform with international tax reform, because we have a bunch of money, as you know, a trillion set overseas and we want to try to figure out a way to bring some of that back. And one thought is to link it into infrastructure.

So those are two things we have been debating in the Senate, two different ways to handle transportation, one moving and one kind of sitting out there that a lot of people would like to do.

And so I just wondered how dynamic scoring would change the way you would interpret those two different proposals. I guess I would start with you, Senator Gramm.

Dr. Gramm. Well first of all, I think dynamic scoring would be looked at for every proposed change in legislation. And to the degree that you had a transportation bill that dramatically changed the quality of transportation in the country, I think that you could make an argument that it would have a macro economic effect.

I think whether it would have an effect within the time period you're budgeting, you would have to look at. But the whole purpose of the transportation bill is to strengthen the economy, to expand the Gross Domestic Product. I think it is a perfect case of something that we would look at.

And I think you would go back and try to, for example, look at evidence during the Eisenhower era when we built the interstate highway system. I think that there might be empirical evidence out there that could be used.

Senator Klobuchar. Why don't we go to you, Mr. Buckley, and then work our way back.

Mr. Buckley. I am in agreement with Senator Gramm. I think there is empirical evidence that infrastructure spending would be

valuable, and I think that type of information should be part of the legislative process.

However, the economic models that we are talking about today assume that infrastructure spending has an investment return half of what would be available if it were not done, compared to what the private sector would do.

The CBO simply assumes that all government investments have a rate of return equal to half the rate of return realized by a private investment. So if you use these models, which I believe substitute assumptions for analysis, you would find that infrastructure spending is not a good idea, and it provides no benefit for the economy—which I think is just counterintuitive.

Senator Klobuchar. Thank you. Dr. Hassett, do you agree with that?

Dr. Hassett. Oh, thank you, Senator. You know, I think that you are correct that the argument in favor, that Senator Gramm and I and Mr. Diamond are making in favor of making the best evidence available, should apply to a wide range of things.

The infrastructure literature is one of the strongest literatures, I think, where it is very clear that infrastructure investment on average has a very significant positive growth effect.

But, you know, that gets back to my last point, and I certainly don't want to take all your time, but if you think about, we had the question of what is "conservative scoring," and I'm not talking about partisan conservative/liberal, I just say what is conservative scoring, it is an example.

So if you are going to spend money on something where the estimated rates of return are in the double digits in the academic literature, then you ought to get rewarded for making such a good choice based on everything that economists know.

Senator Klobuchar. And Mr. Buckley has a different view of that—

Dr. Hassett. He basically said something that made no sense to me, frankly, that because if you are not going to do any analysis then how are we substituting assumptions for analysis by doing dynamic scoring? The whole point about not allowing a dynamic score is we just assume—let me give you an example—

Senator Klobuchar. Do you have evidence with infrastructure of how it has been scored in the past, like international tax reform? And then Congressman Brady is going to ask—

Dr. Hassett. I would be happy to correspond on this. I did not prepare an infrastructure—

Senator Klobuchar. Okay—

Dr. Hassett [continuing]. But as a conservative estimate, just to give an example, suppose that we were to increase the corporate tax rate to 90 percent. It is not something that anyone would propose, but suppose that we did.

Well if we just do a static score of that, then we will get a lot of revenue. And that is not a conservative judgment, right? So the conservative should be like what is the actual revenue that we can expect to get? That is what conservative budgeting is. And not allowing a dynamic score I think is not conservative.

Senator Klobuchar. Well I am out of time, but I might follow up with some of this in writing, if you guys could look at how

these—I have just mentioned two separate proposals here. You know, one is the Drive Act, which is the pay-for model that Senators McConnell and Inhofe and Senator Boxer negotiated. And then the other one is more of an idea of using the taxes, the money that is sitting over there that we want to bring in. And of course we have not really defined how much of it would go to infrastructure, but it is just another way of paying for it.

All right. Thank you.

Vice Chairman Brady. Thank you, Senator. Without objection I will place in the record a report by Doug Holtz-Eakin, a good friend of the Committee, on dynamic scoring and infrastructure spending, how it is used in evaluating policy proposals.

[The report titled “Dynamic Scoring and Infrastructure Spending” appears in the Submissions for the Record on page 69.]

Vice Chairman Brady. With that, Mr. Paulsen is recognized.

Representative Paulsen. Thank you.

It just seems to make sense that we should be using all the tools available as we make these important policy decisions that affect the lives of millions of Americans every day.

Because we live in a very dynamic world where businesses and individuals make decisions in part based on what takes place here in Washington, lawmakers should have access to information that takes into account the real-world impact of these proposed policies on the people we serve.

Congress does not have a good track record predicting the economic impact of its policies, because we have relied on these computer models that are unreliable. Everywhere else, as you mentioned, we are using the best information available. But for some reason we are not using it here, because we think we are in some alternative universe, and so we don’t have to worry about that.

Senator Gramm, I think you pointed out the historical concept of demonstrating how fiscal policy changes have either accelerated or decelerated real GDP growth over the last several decades, and how the resulting changes in economic growth have affected federal outlays, receipts, budget deficits, et cetera, with revenue being up, GDP being up after some of the changes in the 1980s for instance.

I was actually encouraged just a couple of years ago when the Senate, under Democratic control then, took a vote to have dynamic scoring used as a part of their tax reform modeling, and now the House has put this formally into its rules. I strongly believe that we need to fix the broken tax code with comprehensive reform so it promotes investment, savings, and hard work.

So let me just ask this, and maybe Senator Gramm, I will just start with you. Because you have been here as a former Member with a wide variety of background, what value does incorporating this real-world impact into a scoring model have for current lawmakers? And do you believe the use of an economic model that includes real-world or dynamic impacts could help grow consensus here in Washington around tough-to-tackle issues like tax reform or entitlement reform?

Dr. Gramm. Well I think that we need to use the best tools that are available. And when dynamic scoring, as we’re calling it, but using the feedback effect that policy changes have on the economy and on the Federal Government’s fiscal position, that refusing to

look at that simply guarantees that we are going to have poor results.

And as I said in my opening statement, if you look at the budgets of the United States and what the predictions were and what has happened, the biggest errors always occur because of changes in the economy. And they just swamp policy changes that are scored on a static basis.

So I can't understand why we would not try to undertake this. And you've got to undertake it for everything. Trying to look at feedback effects on the economy is not about tax cuts. It is not about changes in transportation. It is about all the above.

Now you have got to meet criteria, it seems to me, to claim the scoring. You've got to have a theory that makes sense. You've got—it's got to have a feedback effect in the time period you are budgeting, and you've got to provide some empirical evidence.

But where you can do all three, to just simply say that this makes no sense, I think again where these terms become proxies for policies that people differ from, if somebody could come up with an education reform program that honest-to-God dramatically affected education in America, and did it quickly, it would merit a huge dynamic scoring.

Now there is a big difference between talking about it and doing it. But the point is, those are the kind of things we ought to be looking at. And if somebody has got a good idea, they ought to get credit for it in terms of what it is likely to produce. I think that is the point that we are making.

And I don't see how you can be for dynamic scoring for transportation and not for dynamic scoring in tax reform. I mean, again it is obvious. You are just talking about what you are for, not for the tools you ought to use in trying to understand it.

Representative Paulsen. Is there a downside to having the additional information that dynamic scoring can provide?

Dr. Gramm. Well look. You can always be wrong, and we're almost certainly going to be wrong, but it seems to me in every area of life, from the practice of medicine to drilling for oil, to whatever, you operate with the best tools you've got until you get better tools, but you learn from the process. And I think that is what we need to undertake.

And I like the idea of a range of options. I like the idea of giving outside people a chance to comment on it. I like the idea of trying to form a consensus. But I don't think you can begin: Well, I'm for dynamic scoring here because I am for this policy, but I am against it here because I am against that policy. It just does not make any sense.

Vice Chairman Brady. Thank you. Representative Beyer, you are recognized.

Representative Beyer. Thank you, Vice Chairman Brady. Thank all of you very much for coming to be with us.

Senator Gramm, it is wonderful to see you again, and thank you for your humility as an economist. I am encouraged by—although I am hearing first that there seems to really be a consensus among the panel that if dynamic scoring makes sense on the revenue side, that it also makes sense on the investment side, at least for things that can be measured like infrastructure investment.

I would also like to thank Dr. Diamond for his comment, "I know I'm right." It's the first time I have ever heard an economist say something with such confidence. So, excellent.

[Laughter.]

Good work. In Senator Gramm's written statement, and I think also you said here there were three conditions. You said, first there must be a clear and established economic theory suggesting a causative link between specific policy changes and a substantial macro economic effect, et cetera.

And Peter Orszag, in this thing that was handed out, said, on dynamic scoring, "You're forced in the organization to pick one true model, when economic science hasn't produced a single model that works."

So I got to study economics for four years as an undergraduate and am completely confused. We weren't supposed to have stagflation ever, and Japan had it for 10 years. No growth and strong inflation.

Our \$800 billion stimulus bill put together with quantitative easing one, two, three, and four, was supposed to give us inflation, and we have not seen it.

IMF and Europe imposed austerity on Greece to fix their economy. It clearly has not worked.

Mr. Buckley, do you think that we have established, quote, "a clear and established economic theory that gives us a basis for dynamic scoring"?

Mr. Buckley. I don't believe that any member of the panel would say that there is a single model that comes up with the right, acceptable number. So the answer is: There's not.

Now one thing I think, at least in my mind, there is a sharp distinction between providing more information for the debate and affecting official scores. I think the more information, the better. In that broad range of estimates, it is probably the best you can do.

I think on transportation spending, there is real good evidence that it provides benefits that are dramatic to our economy. You cannot have a modern economy without a modern transportation system.

I think that information should be part of the debate—but the question is: Would you reduce the cost of a transportation bill by those benefits?

I think that would be inconsistent with cost accounting. At the end of the day when they announce the deficit, those dollar expenditures will be recorded, not reduced by anticipated benefits.

So I think you have to be kind of consistent in the way you do it. Now don't interpret me as saying you shouldn't be provided that information to justify this.

Representative Beyer. That is a great transition. Back to Senator Gramm, both in your questions and your written statement you say, quote, "It is important to remember that dynamic scoring is not a replacement for traditional static scoring, but rather an enhancement of it." But the new rule passed by the Congressional Republicans in the House, at least, H.R. 1, requires the JTC and the CBO to provide a single revenue projection.

I am sort of building on what Congressman Paulsen said. That estimate is official, not advisory. Wouldn't you agree that this new

rule makes less information available to policymakers rather than more?

Dr. Gramm. Well I can't imagine that they're not going to provide the building blocks they use to try to come up with the scoring. If I were doing it, I would want to set some broad parameters. And then I would want to try to see to what degree you might reach a consensus as to what the best estimate would be.

So I might go about it that way. But do I believe we're better off in trying to look at the feedback effect of our policy on the economy and the government? I think we are better off trying to do it. I don't claim it's going to be perfect, or it's going to be a good estimate every time. But, you know, you look back at even static estimates we've made, often they've been very poor estimates.

I could give you examples that would go on and on about how we projected something and then the economy just blew it away.

Representative Beyer. Thank you, Senator Gramm.

Mr. Chairman, I yield back.

Vice Chairman Brady. Thank you.

Representative Schweikert, you are recognized.

Representative Schweikert. Thank you, Mr. Chairman.

Dr. Hassett, if I came to you right now and said I want to design the optimum dynamic scoring model in a modern society, and you know, I'm a big fan of crowd sourcing information and today we all walk around with super computers in our pocket. The ability to grab lots and lots and lots and lots of data sources and capture them—because my understanding is you're the closest one right now to sort of doing that in a public, open forum. How far can we take that?

Dr. Hassett. Thank you, Mr. Schweikert. It actually is a very relevant point for the previous conversation, too, because my belief is that there is no one correct model, that there are lots of models with lots of different characteristics. Some models allow for unemployment. Some of them don't. They assume that we're always at full employment.

I think that, you know, Mr. Buckley said we shouldn't use the models, we shouldn't put any weight on the models that don't have unemployment. And, you know, the current CBO long-run forecast assumes that we're at full employment a couple of years from now. So it's a very standard thing.

But what we have to do is let a professional staff look at all of the evidence and then make a considered judgment about what the right answer is. And that is the way to do it. And so I want to look at models like Mr. Diamond's model, which is a model I worked in graduate school, a predecessor model of that. But there are a lot of other models, too, and some of them have Keynesian effects, and——

Representative Schweikert. But would you accept an open source model where different data sets could be put in? You know, if I had some data set from my region of the country——

Dr. Hassett. Exactly.

Mr. Schweikert [continuing]. I could plug it in and see the effect?

Dr. Hassett. And what you have to do is look at basically the information set and construct estimates of what are the prob-

abilities of the different things that might happen. And the way you do that is you look at lots of different people's approaches.

And so what we have tried to do is, one of the obstacles for this is there are macro economists all over the world developing macro economic models that will allow you to change policy and see what happens. But they are not linked to the things that we use to score because they don't have the micro simulation model as the sort of first move.

And so what we have done is that we have automated the bridge between the model that you get right now in the static score and the things you need to actually get a macro economic model to work so that people with macro economic models can link them to what we're doing, and then hopefully in a year or two we will have lots and lots of these models that we can look at.

Representative Schweikert. Dr. Diamond, (a) is that the future of how you would do it, but also how do you design a model that reflects today compared to the data set we had a month ago? I am fixated on the Atlanta Fed's GDPNow because of its constant reacting to what happened that week of data.

I mean, how dynamic can you make the model? And can you make it in a way where we are able to look at it today and understand what it is doing to our policies?

Dr. Diamond. I think what Kevin is doing in open source modeling is invaluable, and it is an idea that I've kicked around and just never made it work, and I am really glad to hear that someone is taking the lead. I think it is going to be a brilliant advancement of modeling technology.

It may—I don't think the model you are explaining really exists today. I mean, in some sense they do but the changes are hard, and they take a lot of time.

Representative Schweikert. But my concern, where I was trying to take this is what happens today when we get information that says, hey, the decision we made six months ago, or five months ago, isn't working? Should we as a Congress also start to become much more dynamic in our policy? Instead of saying: This is our policy for all of 2016, and if it doesn't work, well be damned with it.

Dr. Diamond. Absolutely. We should all be like that. And I think that when we get that evidence, we have to be willing to change course. And that is why I think dynamic analysis is so important, because it provides information about which course you want to take.

Representative Schweikert. Well you could also start to design policy. It's as if the data you're getting does this, the law kicks in this, or takes this away, or adds this. So you could also actually start to be much more disciplined and creative in what we actually draft around here.

Dr. Diamond. That's amazing.

Representative Schweikert. Senator, okay, you were trying to make the point of how we've heard some fairly blatant partisan discussion on dynamic scoring, but I still remember many of my friends on the left just being almost evangelical about dynamic scoring when they were talking about the \$831 billion stimulus bill, and the multiplier effects it was going to have.

Don't we have lots of examples around us where we seem to choose our poison?

Dr. Gramm. Well I think, and God knows I don't want to be critical of the Congress, but what tends to happen——

Representative Schweikert. Oh, please do.

[Laughter.]

Dr. Gramm [continuing]. Is that people pick and choose based on what they want, sort of to try to get the best argument they can make for their position. And it is easy to understand, and I'm sure that I have done it on many occasions.

The point is, however, that this ought to be something we are looking at all the time. And in most cases a group of totally non-partisan experts, if such a thing exists, would throw it out and say: Well, this just doesn't rise to the level that you would ever want to make a projection based on it. It's not big enough. It doesn't happen soon enough. There's not enough empirical evidence.

But every once in awhile there will be a policy change that is big enough. And when it does happen, it ought to either get credit if it has a positive effect, or have cost attributed to it if it has a negative effect.

And when you were saying about how, you know, if we had this evidence the policy was not working we'd quit doing it, actually most of the arguments would be it's not working because we're not doing enough.

Representative Schweikert. And with that, Mr. Chairman, thank you.

Vice Chairman Brady. Thank you. Representative Delaney is recognized for what will certainly be a discussion about infrastructure——

Representative Delaney. Well, no, I feel like that was covered thoroughly. So I want to pivot to just a question. Because, look it, to me there is no argument against dynamic scoring. Right now the Congress has put itself in a position where it cannot make any judgment decisions, right?

We assume that changes in revenues have no effect—or changes in tax policy have no effect on behavior; we know they do, sometimes dramatic, sometimes modest.

We also assume that government spending and investments have no effect on economic activity, and we know they do. Sometimes dramatic. Sometimes modest. So to me there is no legitimate economic rational analytical argument against dynamic scoring. We should be doing it.

But when I think about it from kind of a private sector context, when a private business changes its revenues, or it changes its pricing to hopefully encourage more revenues—which is kind of the analogy to tax policy—or when a private enterprise makes an investment because it thinks it will have a decent return on its investment instead of modeling it at a zero, which is basically what the government does, there's a governance model in place where people generally have the best intentions in terms of making good rational decisions. So a board of directors looks at a proposal to make an investment, or they look at a proposal to lower pricing, and they debate whether it will have the intended effect. Sometimes they're right. Sometimes they're wrong. But there's a good

governance process where these decisions are made on a rational basis.

The worry, obviously, with dynamic scoring, the only worry I have is it will obviously be manipulated for ideological benefit.

So do you have any thoughts as to what other things should change from a governance perspective so that we could actually feel comfortable doing what we obviously should do, which is to get away from static scoring, which we know is wrong 100 percent of the time? It's always wrong, right, because there are these behavioral changes. There are these economic effects. And move to dynamic scoring which has a much better chance of being accurate. It's not going to be 100 percent accurate, but it has a much better chance. How we can do that in a way with some kind of comfort that maybe we have a better governance?

Dr. Hassett.

Dr. Hassett. May I answer first, because—and thank you. I absolutely share that concern. And the first thing is that I think that a static score you would basically have the same concern, right, that they could call it a static score. And yet our scoring bodies are incredibly distinguished. I trust them, and I think you trust them to do the static score to very high professional standards.

But the second thing, and this is the thing that's a little bit different from the current static scoring practice that we're trying to sort of insert ourselves into, is that we just need to see how they do it—

Representative Delaney. Right.

Dr. Hassett [continuing]. What they say, because, you know, to try go back and figure out whether scores were correct or not, on average it's almost impossible. It's a very, very difficult thing.

But if we start being fully transparent, then we could evaluate how we do. We thought it was going to be this much revenue, it was that much revenue.

Representative Delaney. So like a budget—you know, in the private sector you would normally have, when you're looking at financial performance, you have budget and actual. And you're actually looking at how your performance compared to what you thought it would be.

You would recommend more of that kind of discipline?

Dr. Hassett. Yes.

Representative Delaney. You're right, because there is a bit of a man-behind-the-curtain thing here, which it's not clear how some of these scores are determined. That will be less transparent. Let's face it, static scoring is easier than dynamic scoring, right?

Dr. Hassett. Um-hmm.

Representative Delaney. So this will be a harder process I think. And we do need much more transparency of how they make the decisions, and actually how they're performing. Because if they're doing a bad job, we should get new scorers in, right? You know, just like in a company, if people do bad financial modeling, you get new modelers in to hopefully do a better job.

Dr. Hassett. Can I even say one last thing, which I feel strongly about, that I'm not sure I would chose dynamic scoring that's not transparent for static scoring, because with dynamic scoring you have a lot more wiggle room to do stuff. And if there is somebody

unethical doing that, then it is going to be much harder to discipline them. So I think it is very important for dynamic scoring to be done in a fully transparent way.

Representative Delaney. So you would make them disclose all their assumptions.

Dr. Hassett. Yes, and the model.

Dr. Gramm. And all their data.

Representative Delaney. Yes, that went behind it. So what we are talking here is dynamic scoring coupled with a much more robust level of transparency. Any other governance changes you might make, Senator Gramm?

Dr. Gramm. I think because of partisanship, because of the difference in the sort of behavioral objectives in a private entity that at least everybody is trying to be successful versus a political entity where people have different objectives, I think you've got to have a pretty high standard that has to be met before you are going to employ the result of your model.

I think there is a heavier burden of proof here. Sort of an effort to sanitize it where there is enough of a consensus that there—

Representative Delaney. Right.

Dr. Gramm [continuing]. That there is more than just a partisan push here. And I think again this open model where you could get input from anybody in the world who could send you their views on it, and, you know, a lot of them would be pretty—you wouldn't take seriously, but some of them might be very serious. And I think that's a good idea.

Representative Delaney. Good. Good. Thank you, very much.

Vice Chairman Brady. Thank you.

Representative Grothman for the final question.

Representative Grothman. I hate to question this love fest here, but I would like to respond. I personally believe in the Laffer curve. I do believe as you cut tax rates it has to affect behavior.

I am very, very skeptical of studies that show that everything the government does is an investment and will pay for itself. You know, we need more preschool, more kids going to college even though people can't get jobs today. We need more prevention programs, more infrastructure.

And when you combine the idea that tax cuts result in increased revenue collections, and that all these new spending programs result in—are actually investments which will more than pay for themselves, it seems to me, well, it seems to be pretty keynesian economics, almost making it part of the statutes. You know, the idea that the bigger and bigger deficits just keep paying for themselves, I think that's a little bit scary.

Obviously I dislike the idea that bigger government leads to more prosperity, more than I do the idea that lower tax rates lead to prosperity. But just on the face of it, it seems where we're headed is, let's in the next budget cut taxes and spend more money on a variety of programs, and we're just going to be running surpluses soon.

And I think that is kind of a scary thing. I would like you guys to respond to that fear that I have.

Dr. Gramm. Well I think it can be a scary thing. I think that everybody argues that their pet program is the magic solution. And

I think that is why you've got to have a very high standard before you would accept to use dynamic scoring.

Now most of these arguments fall apart when you take a close look at them, but I think that setting up a procedure to evaluate them, where you have agreed in advance that unless the evidence is pretty overwhelming you are not going to do the dynamic scoring, I think that is the right way to go.

But I think caution on both sides of the aisle is the right thing to do.

Dr. Hassett. Could I just add one logical thing? It's very short. That if we spent the \$100 billion burying \$100 billion in the ground, the classic textbook Keynesian policy, we would get more GDP this year. But then we don't do it next year and government spending is going down by the \$100 billion, so we've just located \$100 billion this year, then there is an equal and opposite effect tomorrow and GDP is going down because we've got less government spending than we had this year, and so the growth rate will be lower. So we could spend more this year, but then we have to pay for it. And when we pay for it, there will be a net cost.

And so if you look at the long run effect of Keynesian policies in a budgetary manner, then you find a negative cumulative effect because there's equal and opposite effects up front but then a long-run cost of paying for it. So I don't think that it would induce a lot—if we were to increase government spending, it would produce a lot of Keynesianism. What it might do, though, is make you spend things where we have a lot of evidence that it is a positive, like building wider bridges and things like that. There is a lot of evidence that that is a very high rate of return place.

Representative Grothman. We would all be wealthier if we had wider bridges? Do you really believe that?

Dr. Hassett. It depends on where you put them, but there are a lot of bottlenecks in the D.C. area where people are wasting a huge amount of time getting to work because you have to get across the river if you're in Virginia.

So, yeah, I think that you could make Virginians wealthier and their property values would go up if it was easier to get into D.C.

Representative Grothman. Would you describe yourself—I mean, I didn't know we had—I guess we're told on the thing here that, you know, the guys on the left are Republican, or my left. Would you describe yourself as a Keynesian?

Dr. Hassett. No. Absolutely not.

Representative Grothman. Okay, I will yield back my remaining 40 seconds.

Vice Chairman Brady. Thank you.

I want to thank the panel for being here today. Let me first submit for the record for Mrs. Maloney a report from the Center on Budget and Policy related to budget and tax plans, an outline on dynamic scoring.

[The report titled "House 'Dynamic Scoring' Rule Likely Will Mean More Tax Cuts—Not More Information" appears in the Submissions for the Record on page 87.]

Vice Chairman Brady. You know, our goal was to have a discussion about how do you create the most accurate and complete assessment of the economic impact of policies.

What I seemed to hear today was that dynamic scoring does not apply to everything, but where it does it should be applied and considered; that the impact has to be big enough; the cause and the evidence has to be accurate enough. And it is critical that all these models be open both in the data and the models and the assumptions for both parties to have confidence in the range that it is arriving at.

So with that, let me thank all the panelists for being here today, and I want to give a special shout-out to my former Senior Senator from Texas who we work hard to try to follow in your footsteps every day. Thanks so much for coming back to the Senate today.

With that, the hearing is adjourned.

(Whereupon, at 3:38 p.m., Tuesday, July 28, 2015, the hearing was adjourned.)

SUBMISSIONS FOR THE RECORD

PREPARED STATEMENT OF HON. DAN COATS, CHAIRMAN, JOINT ECONOMIC
COMMITTEE

The committee will come to order.

I would like to welcome our witnesses, including my former colleague and good friend Phil Gramm, who I am not used to seeing on the other side of the dais! I thank all of our witnesses for being here today to discuss the concept of “dynamic scoring,” a topic that has been much debated since the House passed a rule earlier this year requiring the Congressional Budget Office and the Joint Committee on Taxation to use dynamic scoring when evaluating “major legislation.”

The Joint Committee on Taxation and Congressional Budget Office have long provided lawmakers with estimates of spending and revenue changes that would occur should a bill become law. For decades, however, these “scores,” as they are known, have largely ignored the biggest driver of surpluses and deficits: economic growth.

That’s because the current method of estimation—known as “static scoring”—does not reflect the reality that the economy can grow or contract as a result of public policy. Most notably, it does not account for the massive effects that policy can have on labor supply or private investment, two of the largest drivers of the U.S. economy. Ignoring these effects leaves lawmakers in the dark, unable to debate legislation with all available information at our disposal.

While dynamic scoring has been debated for decades, it is no longer “voodoo economics.” In fact, advances in computer technology and economics have finally brought us from the question of, “Can it be done?” to the answer of, “Yes, and here’s how.”

We have the rare opportunity today to hear from those who have been in the trenches of this debate as lawmakers, congressional staffers, and academics.

I’d now like to recognize Ranking Member Maloney for her opening statement and then will turn to Vice Chairman Brady, who was instrumental in putting together this hearing.

PREPARED STATEMENT OF HON. KEVIN BRADY, VICE CHAIRMAN, JOINT ECONOMIC
COMMITTEE

Chairman Coats, Ranking Member Maloney, Members, and Distinguished Witnesses:

Thank you, Chairman Coats, for convening a hearing on such an important topic.

Let us begin with a common-sense proposition. To make fiscal policy decisions that will increase the prosperity of the American people, Congress needs to have the most accurate and complete assessment of the economic effects of any proposed entitlement spending and tax legislation.

Until this year, the Congressional Budget Office (CBO) and the Joint Committee on Taxation (JCT) have “scored” proposed entitlement spending and tax bills, respectively, on a micro-dynamic, but macro-static basis. Under this treatment, the CBO and the JCT allow certain changes in the economic behavior of individuals and businesses in response to the enactment and implementation of proposed legislation, but hold the size of the U.S. economy (real GDP) unchanged. For example, the JCT would concede that a \$5 per gallon increase in the federal tax on motor vehicle fuels would cause households to drive less and consume less gasoline. Counterintuitively, however, the JCT would deny that such a tax increase would affect the U.S. economy overall.

This scoring convention is, of course, economic nonsense. In his testimony Senator Phil Gramm demonstrates how major fiscal policy changes accelerated or decelerated real GDP growth over the last three decades and, in turn, how the resulting changes in economic growth affected federal outlays, receipts, budget deficits (or surpluses), and debt held by the public over the last several decades. Rather than delivering realistic projections, the current scoring convention reflects the limitations of economic modeling and computing capacity in the 1970s.

In contrast with conventional scoring, dynamic scoring requires the CBO and the JCT to assess not only whether proposed entitlement spending and tax legislation would affect the economic behavior of individuals and businesses at a micro level, but also whether the aggregation of all such behavioral changes would affect overall economic growth. In other words, dynamic scoring removes the artificial, arbitrary, and unrealistic supposition that major entitlement spending and tax changes will not affect the U.S. economy as a whole. Put simply, dynamic scoring is proven, real-life analysis that helps policymakers from both parties weigh the impact of proposed changes.

The question before the Joint Economic Committee today is whether the implementation of dynamic scoring of major entitlement spending and tax bills would im-

prove the quality of economic information available to Congress before making major fiscal policy decisions. The answer is an unqualified yes.

Since being elected to the House of Representatives in 1996, I have been involved with tax and entitlement scoring issues on the Ways and Means Committee under Chairmen Bill Thomas, David Camp, and Paul Ryan. I have observed the great progress that economists from diverse political viewpoints have made in refining their macroeconomic models and developing a consensus around the estimates of key parameters over the last two decades.

As Dr. John Diamond and Dr. Kevin Hassett will testify, economists now have the ability to make reliable forecasts of the macroeconomic effects of entitlement spending and tax bills on real GDP growth and the feedback of such growth on federal outlays, receipts, budget deficits (or surpluses), and debt held by the public. The limitations that led to conventional scoring in the 1970s no longer apply.

Since 1997, the House of Representatives has allowed the Chairman of the Ways and Means Committee to request dynamic analysis of major tax legislation from the JCT, but for informational purposes only. In 2015, the House adopted a new rule requiring any proposed entitlement spending or tax legislation that would create a gross budget change equal to or more than $\frac{1}{4}$ of one percent of GDP to be scored on a dynamic basis. Other legislation designated by either the Budget Committee Chair or the Ways and Means Committee Chair must also be scored on a dynamic basis.

Technology has advanced. The economy has become more complex. Sticking blindly to the old ways robs policy makers in Congress of new, more accurate insights on key challenges facing our country.

While dynamic scoring may involve multiple models and different estimates of key parameters, dynamic scoring provides Congress with a consistent, though not identical, view of how proposed entitlement and tax changes would actually affect the real world. Yes, there is some uncertainty, but that is part of the real world, too.

Currently, dynamic scoring applies to major entitlement reform and tax legislation. One of the Members of this Committee, Representative John Delaney, suggested in a Washington Post op-ed in January of this year that dynamic scoring should also be applied to infrastructure spending. While there may be merit to scoring government spending if it significantly changes the overall economy, at this point Congress should focus the CBO and the JCT on major tax and entitlement proposals before expanding the scope of dynamic scoring.

I look forward to today's discussion with our witnesses.

PREPARED STATEMENT OF HON. CAROLYN B. MALONEY, RANKING DEMOCRAT, JOINT ECONOMIC COMMITTEE

Last month, this committee held a hearing on so-called "fair value accounting," a method of calculating the impact of federal lending programs that will make them appear more expensive.

Today, the committee turns its attention to dynamic scoring, a method of analyzing and quantifying the budgetary impact of tax cuts that will make them appear less expensive.

Both methods are very problematic.

And in both cases, they change the rules of the game so my Republican colleagues can get the results they want.

Dynamic scoring has been conservatives' Holy Grail for many years. This is because if tax cuts appear to cost less, it will be easier for Congress to pass more of them.

Revenue estimates are based on projections of future behavior. For many decades, budget effects from legislation were estimated using what my Republican colleagues mistakenly called "static" models. These models are not "static" because they anticipate how individuals would react to the legislation, and the models are broadly accepted by the experts in the field.

Recently my Republican colleagues changed the scoring rule by requiring the estimates to include the effect of legislations on the whole economy, which is called "dynamic scoring."

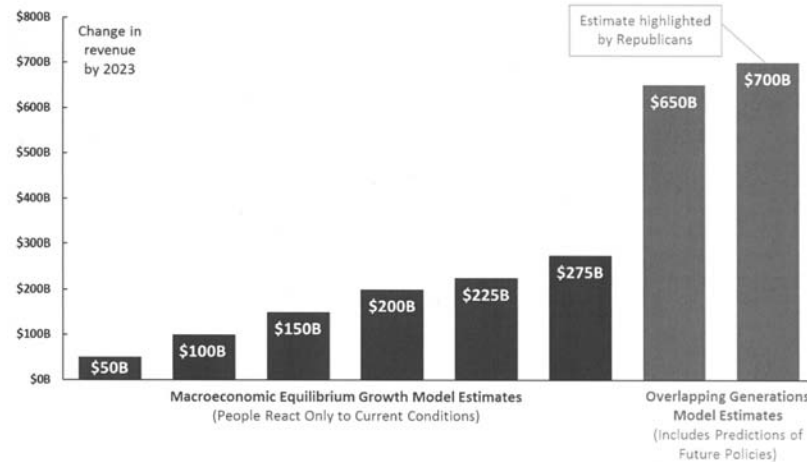
But there are serious problems with dynamic scoring. One problem is that it provides results that are highly uncertain, vary wildly, and could be subject to manipulation.

Let's take the example of former House Ways and Means Chairman Dave Camp's tax reform legislation last Congress.

The JCT performed a dynamic analysis to see how much additional revenue the tax plan could return to the Treasury.

Wide Range of Estimates for Camp's Tax Plan

Tax Reform Act of 2014, fiscal years 2014 to 2023



Sources: The Committee for a Responsible Federal Budget and Joint Committee on Taxation

Notes: Data are based on Table 3 of Publication JCX-22-14 (February 2014); rounded to nearest \$5 billion



They used eight different models. They came up with eight different answers—from \$50 billion to \$700 billion. The largest estimate was 14 times the size of the smallest estimate.

Which estimate did Chairman Camp highlight?

\$700 billion. The HIGHEST one.

This leads to two more serious problems with dynamic scoring—there is no consensus on which dynamic scoring model is the most appropriate, and the models rely on assumptions that are sometimes wildly unrealistic.

For example, one dynamic scoring model assumes that if the debt increases as a share of the economy future Congresses will deal with the problem.

The model assumes that in the future there will be no unemployment.

The fact is that with dynamic scoring, budget analysts will be forced to choose between deeply flawed, models.

Former CBO Director Rudolph Penner has said that:

“... dynamic scoring would force analysts to make many more judgment calls than they do today. Quality control would be difficult, and that implies a high risk that ideological biases will pollute the analysis.”

There is yet another serious issue with dynamic scoring—new rules require a single estimate.

Until now, JCT and CBO have been required—at the request of the chairman of the Ways and Means Committee—to provide a range of dynamic analysis estimates to reflect the different models and assumptions choices.

But the new rule passed by Congressional Republicans requires JCT and CBO to provide a single revenue projection, and the estimate is official, not advisory.

The example of Dave Camp's bill shows that dynamic estimates for major tax bills can differ by hundreds of billions of dollars.

If the Camp bill had become law and the \$700 billion figure proved wrong, deficits would explode.

Because the results are so unreliable, dynamic scoring will compromise the accuracy and integrity of the federal budgeting process.

Former Federal Reserve Chairman Paul Volcker has said simply:

“I won't believe the numbers.”

And what happens if the markets come to doubt the integrity of the scoring process?

Former Federal Reserve Chairman Alan Greenspan has said that:

“Should financial markets lose confidence in the integrity of our budget scoring procedures, the rise in inflation premiums and interest rates could more than offset any statistical difference between so-called static and more dynamic scoring.”

Republicans’ decision to use dynamic scoring—a highly unrealistic and deeply flawed method—may by itself have negative consequences that overwhelm whatever positive revenue effects that could be gained by cutting taxes.

There is still another problem with dynamic scoring as implemented by this Congress—it strongly biases policy toward tax cuts.

The new rule applies dynamic scoring only to tax cuts, not to discretionary spending.

There is a broad consensus among mainstream economists that investments in infrastructure, education, and research and development can have a strong stimulative effect, but the new rules do not apply to discretionary spending. For this reason, these investments will seem very expensive relative to tax cuts, and Congress will be more likely to cut them.

But does that mean that we should apply dynamic scoring to discretionary spending proposals as well?

No—because an accurate and impartial method of dynamic scoring remains far beyond the reach of economists and budget analysts.

Until those models improve vastly, there is little justification for using dynamic scoring on either tax bills or spending bills.

The dynamic scoring rule serves only one purpose—it helps Republicans reach their Holy Grail . . .

. . . rigging the rules so it’s easier for Congress to cut taxes.

Bruce Bartlett, a former aide to President Reagan, put it this way: dynamic scoring

“ . . . is not about honest revenue-estimating. It’s about using smoke and mirrors to institutionalize Republican ideology.”

I look forward to our witnesses’ testimony.

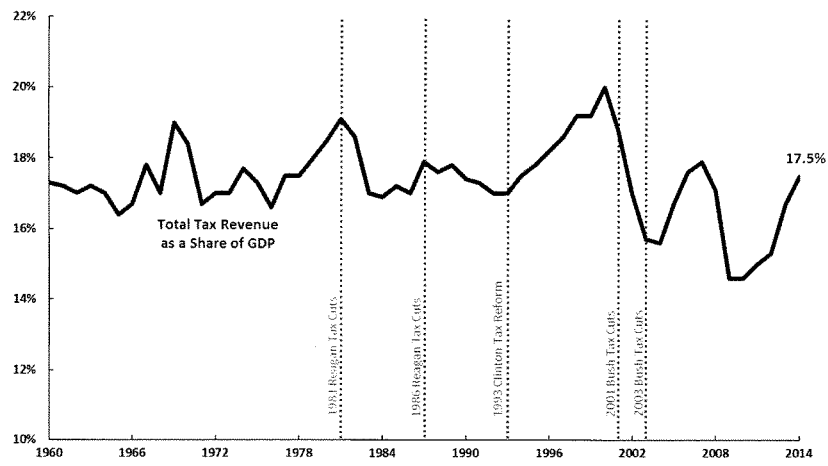
Corporate Tax Revenue as a Share of GDP Near Historical Lows



Source: Office of Management and Budget
Note: Data are for fiscal year 1934 to 2014



Total Tax Revenue as a Share of GDP



Source: Office of Management and Budget

Notes: Data are for fiscal year 1960 to 2014; selected major tax laws shown



PREPARED STATEMENT OF SENATOR PHIL GRAMM

It is a great honor to be asked to testify before the Joint Economic Committee today, especially because I served with Chairman Coats for many years in the Senate, and Vice Chairman Brady is an old friend of mine from Texas.

During my time in the House and Senate, I focused mostly on the economy and the budget. Anyone who spends any significant time studying the U.S. budget comes to realize that changes in America's economic performance have a profound impact on the budget of the country. Economic changes often overwhelm the expected static impact of even the largest policy changes.

Until we learn how to incorporate the impact of our policy changes on the economy and the budget, we won't have a real understanding of the costs and benefits of our proposed policy changes. When we have a strong reason to believe that a policy change is likely to affect the economy, based upon a logically consistent theory, and good empirical evidence that similar policies have had significant effects on the economy in the past, we should always attempt to employ dynamic scoring.

Dynamic scoring is about finding a way to gauge the full impact that policies might have in increasing or decreasing government revenues and government expenditures. It seems to me that there are three conditions that should be met before dynamic scoring can be used.

First, there must be a clear and established economic theory suggesting a causative link between specific policy changes and a substantial macroeconomic effect of sufficient magnitude to alter revenues or outlays in the federal budget. Second, there should have to be a good reason to believe that the macroeconomic effects would alter government spending or revenues within the years that you are budgeting for, which is normally 10 years or less. Third, there must be convincing empirical evidence that the implementation of these policies in the past has produced both the economic and the budgetary effects that the theory would suggest. On all these points, the burden of proof should fall on those who want to use dynamic scoring.

I'd like to discuss two compelling cases where the theory and evidence of macroeconomic effects and budgetary feedbacks are strongly supported. Both examples are bipartisan efforts and both relate directly to topics that are at the center of the public policy debate today.

The Balanced Budget Act and the Taxpayer Relief Act of 1997 was an agreement between the Republican Congress and President Bill Clinton to balance the budget through spending restraint while cutting taxes. These bills had significant macroeconomic effects that benefited the American people and the federal treasury alike.

In early 1995, CBO initially projected that balancing the budget by constraining spending would create a combined revenue and outlay dividend of \$120 billion from 1995 to 2001, an estimate later increased to \$222 billion. After two years passed in negotiating the details of a balanced budget deal, CBO reported in January of 1997 that much of the original dividend had been incorporated into their baseline so that any additional outlay and revenue dividend was just \$43 billion for 1997 to 2001.

When we compare CBO's January 1997 GDP and revenue forecast prior to enactment of the Balanced Budget Act to the actual results achieved in the next five years, we find that both economic growth and revenue growth after the Balanced Budget Act became law far outperformed anything projected by CBO. Nominal GDP, from 1997 to 2001, surpassed CBO's projected GDP by an astonishing total of \$2.4 trillion—equivalent to \$4.7 trillion in today's economy (2014 GDP). That averaged out to \$480 billion per year higher than CBO's original projections, providing an extra \$8,609 in per capita GDP in those five years.

Revenues also rose beyond expectations, even after Congress and the President cut the capital gains tax rate and established the child tax credit. From 1997 to 2001, cumulative federal revenues were \$1.015 trillion higher than projected before the enactment of these laws. A similar revenue surge today would deliver an additional \$368 billion per year to the government. The CBO reported in July 2000 that "projected revenues for [FY] 2000 are now \$303 billion more than estimated in 1997 ... The primary contributors to that unexpected growth stems from the strength of the economy and changes in the characteristics of income."

The Tax Reform Act of 1986 was designed to be revenue neutral under static scoring by closing loopholes and limiting deductions in exchange for lowering tax rates from a top rate of 50 percent in 1986 to 28 percent starting in 1988. In comparison to CBO economic and revenue projections prior to the full marginal rate reductions, the Tax Reform Act produced a significant macroeconomic and budgetary impact. Its benefits are magnified by the fact that this occurred well into one of the strongest and longest postwar recoveries. By January 1988, the recovery was in its 62nd month, over a third longer than the average postwar recovery's length, with the

economy averaging a scorching 4.6 percent growth and never less than 3.5 percent in any year.

Just prior to full implementation of the rate reductions, CBO's economic projections assumed much lower growth, with estimated real GDP growth of 2.3 percent and 2.6 percent, respectively, for 1988 and 1989, but actual growth rates hit 3.9 percent and 3 percent (subsequently revised to 4.2 percent and 3.7 percent).

Nominal GDP for those years surpassed CBO's projected GDP by a total of \$286 billion, equivalent to \$1 trillion in today's economy (2014 GDP). By averaging \$143 billion per year higher, that benefited every man woman and child in America on average by an extra \$1,163 in GDP during those two years. The Tax Reform Act gave a very strong second wind to the recovery, helping to deliver a 38 percent increase in real GDP in the 1982–90 recovery.

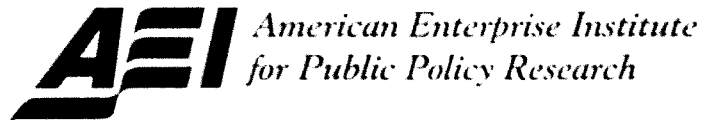
The stronger economy fed back into stronger revenues with Federal income in the first two years after the marginal rate reductions averaging \$25 billion higher than expected. CBO reported that these higher revenues were due to stronger economic factors. As a share of 2014 revenues, that \$25 billion corresponds to \$80 billion today.

Based on the evidence of the bipartisan Balanced Budget Act of 1997, we could expect that any dramatic change in budget policy that substantially reduces the long term deficit through spending control, such as spending restraint and entitlement reform, could reasonably be expected to deliver substantial macroeconomic effects coming from improved business and consumer confidence. I believe a very strong case can be made that a comprehensive entitlement reform package that dramatically reduced the long-term deficit should receive a large positive dynamic score.

Similarly, based on our experience with the bipartisan Tax Reform Act of 1986, we should have confidence in believing that revenue-neutral tax reform that makes our tax system more economically efficient and lowers tax rates would have a substantially positive effect on GDP and, therefore, federal revenues. This is especially true today given that the recovery of 2009 has never taken off.

The Joint Committee on Taxation (JCT) has already projected a potential dynamic score of up to \$700 billion over 10 years from one version of pro-growth tax reform, which would correspond to an average annual revenue increase of \$70 billion. With a dramatic tax simplification and rate reduction program, we could expect to achieve dramatically positive results.

It is important to remember that dynamic scoring is not a replacement for traditional static scoring, but rather an enhancement of it. CBO and JCT have decades of experience estimating the direct impact of legislative changes on the budget, but the largest revisions to their projections and final figures have come from a failure to fully predict and incorporate macroeconomic effects in their estimates. Yet it is those very macroeconomic effects that have been so powerful as to swamp the static estimates of the largest legislative changes.



Statement before the Joint Economic Committee

“On the Dynamic Scoring of Fiscal Policy”

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The views expressed are those of the author. The American Enterprise Institute does not hold institutional positions on any issue.

Introduction

Mr. Chairman and members of the committee: it is a great privilege to have this opportunity to appear before you today. I am an economist who is the director of economic policy studies at the American Enterprise Institute, a think tank here in Washington. Much of the research I have undertaken as a professional economist examines taxation and the consequences of tax policy. I come here today, specifically, to provide testimony on what is known as dynamic scoring in tax policy circles.

At the outset it is important to emphasize that the economics profession has made tremendous strides in the modeling of the impact of fiscal policy on the economy over the past few decades, and there is an ample amount of evidence to point to that suggests that a carefully designed fundamental tax reform could lead to a significant improvement in the wellbeing of Americans. Yet talk of tax reform has not produced truly significant action since the 1980s. I believe that one reason we have made such little progress is that scoring methods do not account for the impact that sound proposals would have on the overall economy. In my testimony today, I discuss the challenges facing those who would hope to do better.

What is dynamic scoring?

Perhaps one way to understand the concept of “dynamic scoring” of tax legislation is to examine the two words. “Scoring” refers to the process of estimating the effects of a given policy proposal. In the U.S. Congressional context, the JCT staff scores proposed legislation, focusing their estimates on the legislation’s effects on government revenue. These estimates provide Congress with a guide to thinking about the revenue implications of proposed changes. Historically, static scores of tax proposals have often relied on enormous micro data files, giving the relevant staffs an impressive ability to account for compositional issues when evaluating policies. These microsimulation results, however, have, until this year, been the final word.

“Dynamic” refers to estimating these budgetary effects in a way that allows the proposed legislation in question to alter the overall level of economic activity. That is, the “dynamic” in dynamic scoring refers to allowing the estimate of the effect of the proposal being scored to include a causal effect from the proposal to the overall level of economic activity (i.e., GDP), which in turn could have an impact on revenue. Until the rule change enacted this year, scoring practice did allow for significant compositional changes in response to tax changes, but not dynamic changes.

For many proposals, the conventional scoring process is a sound way to achieve the objectives of scoring. For example, a targeted tax on a minor pollutant might reduce that pollutant, and raise some revenue, but have little impact on the overall economy. For major proposals that seek to draw on the best evidence in the academic literature on fundamental tax reform, however, the conventional scoring process can lead to wildly misleading estimates of the revenue impact of changes. The purpose of a fundamental reform, after all, is to improve the functioning of the economy. But dynamic scoring is also challenging. Most importantly, economists need to find a way to link the static estimates drawn from large microeconomic databases with macroeconomic models that, traditionally, have far less microeconomic detail.

How wrong is the current approach?

The potential for conventional scoring to mislead is significant. For example, in 1997, the JCT organized a symposium of the world's leading economists to analyze the impact of a fundamental tax reform that enacted a consumption tax. The average of the estimates at the symposium implied that such a reform would increase GDP far off in the then future, in the year 2010, by about 5 percent. If that effect turned out to be correct, then GDP would have been about \$750 billion higher in that year, and federal tax revenue might have been about \$150 billion higher. Assuming that effect carried forward to today, we might expect GDP to be almost a trillion dollars higher in 2015 had we adopted such a reform back then. Yet conventional scoring would not allow for these effects, which are very significant economically, since by construction it does not permit estimates to incorporate effects on the overall level of economic activity. Perhaps we did not adopt the reform back then, in part, because a trusted and professional staff did not incorporate such an effect into the analysis of a specific proposal. Had they done so, we might be a trillion dollars better off today.

The symposium relied on very complicated computer models, which might defy the intuition of any but the most sophisticated of economists. But the key idea is not so elusive. A simple example of a dynamic scoring model that can provide intuition for the scale of the expected error for a typical static score comes from former CEA Chair N. Gregory Mankiw, in a 2006 paper that he co-authored with Matthew Weinzierl. Starting with the Ramsey growth model, a standard in macroeconomic textbooks, Mankiw and Weinzierl show that the following holds:

$$\Delta R_{\text{Dynamic}} = 1 - \frac{\alpha t_K + (1 - \alpha)t_L}{(1 - t_K)(1 - \alpha)} \Delta R_{\text{Static}}$$

$\Delta R_{\text{Dynamic}}$ refers to the revenue change under the dynamic scoring procedure and ΔR_{Static} refers to the revenue change under the static procedure. Variable α refers to capital's share of income, t_L refers to the tax rate on labor income, and t_K refers to the tax rate on capital income. To borrow an example from Mankiw and Weinzierl (2006): suppose you wanted to compare the dynamic and conventional revenue estimates for a proposal to lower the tax rate on capital income t_K to be 25 percent, the same rate as the tax rate t_L on labor income in this hypothetical world, where the capital share of income, α , is 1/3. If you input these values into the algebraic expression above, the result is that it reduces to:

$$\Delta R_{\text{Dynamic}} = \frac{1}{2} \Delta R_{\text{Static}}$$

That is, as Mankiw and Weinzierl (2006) note, according to this calculation, in the long-run steady-state the revenue impact of the capital income tax cut is only half of the impact estimated by "static" conventional scoring. The growth effect of this capital income tax pays for 50 percent of the revenue cost of the cut. Or, to put it bluntly, the back of the envelope estimate suggests that the static score can be expected to be off by a factor of 2. The authors also demonstrate that this offset effect is much bigger for capital income taxes, which discourage growth. The intuition for this result is quite straightforward. If we want more output in the future, we will need to have more inputs. If we cut capital taxes, people invest more today, giving us more inputs tomorrow.

To be sure, this "back-of-the-envelope" method of dynamic scoring lacks the nuance and sophistication of the best dynamic scoring models in the literature. Nevertheless, it illustrates the power of even basic dynamic scoring models to shed light on macroeconomic effects of immediate relevance to policymakers.

It makes little sense to ignore any impact a proposal might have on the overall economy when analyzing its impact. If the proposal were expected to have zero macroeconomic effect, as assumed under traditional scoring rules, then in at least some cases there would be little reason to support the proposal.

What should dynamic scoring be applied to?

My testimony will focus on issues related to dynamic scoring of tax legislation, but it is important to stipulate that taxes are not the only policy lever that can affect the overall economy, and arguments in favor of a more rational approach to scoring may also, in the fullness of time, extend to other topics.

In a world of conventional scoring, no tax cut can be estimated as likely to “raise all ships” by raising the level of overall macroeconomic growth. This is because conventional scoring, by construction, only permits changes to the composition rather than the level of economic activity. Thus, current practice focuses one-hundred percent on questions of distribution, treating tax cuts as mere alterations in who gets the benefits of a fixed level of aggregate economic activity. Such a focus has no economic merit. Policymakers, of course, should consider issues of distribution when considering policy alternatives. But to look at distribution only, without regard to economic efficiency, is to deny the basic tradeoff between the two, and frankly, to deny the value of economic analysis whatsoever.

But in a world where all macroeconomic forecasts are uncertain, how can point estimates from dynamic scoring be considered reliable?

Many branches of government must make forecasts in order to fulfill their statutory mandates, even though those forecasts are by their nature uncertain. The Federal Reserve, for instance, must formulate monetary policy in the face of macroeconomic conditions that remain uncertain in perpetuity (albeit to varying degrees). Its members regularly document their own forecasts, and Federal Reserve policy is set with an eye toward the impact that interest rate changes will have on the economy. The reliance of the Federal Reserve on economic models is not controversial.

The absence of controversy regarding that reliance reveals a logical problem facing those who would dispute the usefulness of dynamic scoring for fiscal policy. For example, many tax reforms influence the economy by changing the cost of capital, a variable that depends on expected tax rates, depreciation rates, inflation and the interest rate. The Fed tracks the economic impact of interest rate changes in part through a model of the cost of capital, which influences business investment. An identical change in the cost of capital can be generated either through a change in the interest rate, or through a change in tax rates. The argument that it is acceptable to model the effects of an interest rate change in one corner of the government with such a model, but not model the effects of a tax rate change that has the same impact on the cost of capital in another corner of government is frankly noneconomic. Though the context of dynamic scoring and the context of monetary policy certainly are very different, in both cases the proper response is for the forecast to incorporate a nonpartisan staff’s best estimate into the analysis.

While there is model uncertainty, for many policies that would require a dynamic score, the wide range

of plausible *ex ante* effects of the policy will not include zero, the static assumption. The assertion that uncertainty implies economists should adopt an answer known with certainty to be incorrect is not logical. Moreover, the uncertainty economists face when evaluating fiscal policy is not greater than the uncertainty they face evaluating monetary policies. If we can use models for one application, we can use models for both.

The final possible argument against dynamic scoring is that the congressional economic staff is not up to the task. I wholeheartedly disagree with this. The staffs of the CBO and the JCT are easily as impressive and accomplished as the staff of the Fed.

As does the Fed in its analysis of economic conditions, so should the staff of the JCT and others tasked with the dynamic scoring of proposals incorporate sensitivity analysis, a range of perspectives, and the best thinking of the academic community. If there are many available models for a specific question, the staff should evaluate the broad range of them, and then come to a considered judgment regarding the relative weights of the different results. Such a process already occurs when distributional changes are being modeled, and elasticity assumption are made. Over the years, the staffs of the CBO and the JCT have reliably met the high professional standards one would require of a staff engaged in this process. These staffs will be even more effective if we give them freedom to apply their macroeconomic expertise when circumstances warrant it. Asking them to pick a number that includes dynamic effects is no more of a stretch than asking them to pick a number in the first place.

At the same time, though, streamlining and systematizing the dynamic scoring process seems necessary if a significant number of proposals are to be dynamically scored in a timely manner.

In the context of dynamic scoring, one way of reconciling the need to account for the uncertainty inherent to the forecast with the need to have a process that is to some extent streamlined would be for the point estimate to be presented with a 95 percent confidence interval, much as the results of academic studies typically are. The presentation of these confidence intervals would allow policymakers to temper their interpretation of the point estimate in accordance with the level of uncertainty around it. For instance, suppose that two different tax reform proposals are each estimated to be budget-neutral and have a net zero effect on the federal budget. But suppose one of the reforms has a 95 percent confidence interval of +/- \$500 billion and another has a 95 percent confidence interval of +/- \$10 billion. Assuming policymakers possess a basic level of risk-aversion, it would be rational for lawmakers to prefer the +/- \$10 billion as the more attractive of the two, even though the point estimate of 0 is the same for both of the budget-neutral proposals.

Yet even the construction of such confidence intervals, a critic might argue, leaves ample room for questionable judgment and even outright partisan gaming. It would be easy to imagine, for instance, that individuals opposed to a policy would want the confidence interval to express a wider range of possibilities. More broadly, how can one even have confidence in the confidence intervals?

Here another solution emerges from the context of central banking and the formulation of Federal Reserve Policy, in the form of proposals for monetary policy to be formulated on the basis of publicized rules. The most publicized of these comes from Stanford's John Taylor, who has proposed that the Federal Reserve follow the eponymous "Taylor rule" in formulating Fed policy—or explain, in writing, its decision to depart from the Taylor rule when it does choose to make such a departure. (The Fed would still be able to do whatever it wants, regardless of the Taylor rule, so long as it were willing to provide an explanation of why its chosen policy differs from that implied by the Taylor rule). One could imagine the JCT staff having a similar rules-based process for constructing its point estimates

and confidence intervals.

For example, to the extent that the JCT staff would construct its point estimate of a proposal's budgetary impact from a meta-analysis of the academic literature, the JCT staff could have a specified set of "best practice" procedures that it follows in performing meta-analyses. As with John Taylor's proposal for the Fed, any departures from that standard "best practice" set of procedures would be permissible—so long as it were accompanied by a written explanation of why the standard procedure did not seem appropriate to the staff in that particular instance. This would create transparency that could reassure policymakers and the public that the point estimates and confidence intervals rest on sturdy intellectual foundations. As a bonus, it would save the JCT staff the labor of producing lengthy explanations of each and every set of point estimates or confidence intervals, as the absence of any written explanation would serve as a tacit affirmation that the "best practice" procedures were followed. Only when the exception rather than the rule were followed would the JCT staff need to provide detailed methodological explanations of its point estimates and confidence intervals. It is worth underscoring that this leaves discretion in the hands of the JCT staff rather than in any one model, in recognition of the necessity of human judgment in formulating views based on economic models rather than giving any one specific model the final word.

To be fair, the process of constructing a methodology for the construction of such a point estimate and set of confidence intervals will be complex, even daunting. But the JCT staff would be able to consult outside experts with the depth of knowledge and expertise necessary for the task. The CBO Panel of Economic Advisers serves as a model for the type of body of outside experts that would be well-suited to such a task. It has many of the nation's most prominent public finance specialists and, though the construction of point estimates based on the public finance literature may require a slightly different area of substantive expertise, it is an example of the type of resource the JCT staff could consult in constructing its point estimate processes.

What does dynamic scoring cost?

It is a testament to the quality of the JCT staff they are able to accomplish as much as they are today. Scoring policy proposals, whether through a dynamic or conventional process, is a complex task that demands substantial resources. The JCT staff faces constraints, in terms of both financial and human resources, that put a ceiling on how much work it can accomplish. It would be unreasonable to suppose that the JCT staff could handle any reform to the scoring process that would require substantially more resources on their part without giving them those additional resources.

Shifting from conventional to dynamic scoring is precisely an example of something that would require significantly more resources from the JCT staff. This is due largely to the mechanics of the way that the scoring process has worked in the past. The JCT staff, as one would imagine, has certain analytical assets and procedures that it uses now in its conventional scoring process. To date, these have served the JCT well. Yet shifting to dynamic scoring would require the JCT staff to integrate macroeconomic and other models that are not currently part of the JCT staff's existing stock of assets and procedures. Such integration would therefore require substantial amounts of additional financial resources.

A path forward toward dynamic scoring?

Advances in computing power have significantly increased the ability of economists to analyze complex models, and the Internet has enabled a high level of collaboration between scholars. Economic models are no longer black boxes sitting on a hidden disk on a mainframe. A move toward dynamic scoring should seek to be as open as possible, so that the large and thriving modeling community can provide scrutiny and feedback to professional staff. Even the most able and dedicated teams stand to benefit from the intellectual output and feedback of other able and dedicated teams and individuals, who may be able to fill technical and intellectual gaps that otherwise remain hard to fill. We believe that the scoring process, in particular, is one area where this type of collaborative interaction can add value. This does not mean that “the crowd” should be involved in every score, but rather, that “the crowd” be empowered to evaluate the methods used for the score.

This may sound like an abstract proposal for a fully transparent Wikipedia of the scoring process, but it is far from it. As one example of the potential for informed outsiders to play a role in providing resources to the JCT and its staff, I would like to mention an initiative at AEI we have named the Open Source Policy Center (OSPC). OSPC is a project a long-time in the making that already involves outside experts from all over the country and early beta testers and users. OSPC Managing Director Matt Jensen described the OSPC in a recent post:

The motivating principle behind the Open Source Policy Center is that policymakers and the public should have the best tools for understanding public policy choices, and that those tools should be completely transparent and collaborative in order to promote innovation and quality.

With that in mind, OSPC brings together an open-source community of economists, software engineers, and policy analysts who collaboratively produce open-source computational economic models and web applications that allow non-programmers to easily interact with those models.

The community's first priority is building simulation models of the federal individual income tax system. Later projects will move beyond taxes to model other economic policies, including spending programs such as Social Security, welfare programs, and health care programs. Our goals are to be able to both replicate the analysis performed by government agencies and expand and improve upon that analysis with more elaborate tools.

OSPC projects that have reached the alpha or beta stage include Taxcalc, the first-ever open-source microsimulation model of the US individual income tax code, and LOGUS, the first-ever open-source large-scale dynamic overlapping generations model of the US economy. To enable policymakers, journalists, students, and citizens to interact with the models and gauge first-hand the effects of policies, the OSPC community has also developed an easy-to-use web application called TaxBrain.

In addition, OSPC hopes to pave the way for others to adopt a more collaborative, transparent, and accessibility-driven approach to the development of policy-relevant economic models. Our intent is not just to build models, but to develop a technological approach and workflow that enables geographically-dispersed experts to develop models in an open environment.

To illustrate how initiatives like OSPC can add value and facilitate dynamic scoring, it would be helpful to understand how OSPC “bridges” between public-use individual income tax data and the type of macroeconomic models typically produced by academic economists. Many organizations—the Urban-Brookings Tax Policy Center and the National Bureau of Economic Research TAXSIM

program, for example—deploy the public-use income tax file that the IRS Statistics of Income program generously makes available. With this file, analysts can assess how changes to specific items of the tax code would affect the individuals in the sample. The inputs into the “microsimulation” models based on the public-use file tend to be proposals to specific statutes that a policymaker or Congressmen would know in detail (e.g., raising the maximum value of the Earned Income Tax Credit). One can extrapolate the output of these microsimulation models, generated based on the policy-change input, from the sample of the public-use file to the aggregate population as a whole. This extrapolated output can then be fed as an input into a dynamic macroeconomic model that models a substantial portion of aggregate economic activity—a model of the sort that academic economists tend to create. Thus, one has effectively “bridged” between the micro-level inputs – tax-law parameters -- and the macroeconomic output of a dynamic model. One can then feed the macroeconomic output from one time period into the individual level data of the public-use file in the simulation of the next time period, allowing dynamic effects to play out over time. And so “bridging” between the individual public-use file and dynamic models allows for precise dynamic simulations. As the programs are completely transparent, any individual can explore the impact of changing parameter assumptions, or even flipping from dynamic model to dynamic model. To the extent that analysts disagree about the likely impact of a policy, the software will help the analysts identify the source of their disagreement.

The value of our bridging approach is that it ties together the inputs of the microsimulation model, which tend to be specific statutory proposals that would be unfamiliar to an academic economist, with the output of the dynamic macroeconomic models of academic economists. This serves as a link between the ways policymakers think (e.g., in terms of a modification to a specific statute) and the ways that the world’s best economists express themselves (e.g., in terms of dynamic models with general equilibria). You might think of bridging as analogous to translating economic knowledge expressed in two different languages into a single language understandable by speakers of both—to the benefit, therefore, of speakers of both languages, who can each access the insights of the other in the shared language.

We hope the OSPC evinces a level of transparency and technical rigor that serves as an example for how this type of collaboration can add value to both those inside the policy community and those outside of it. By making the bridge between the two types of models simple, our hope is that the best and most cutting edge modelers will see the value in making their models available to the broader policy community over time. There is no question that dynamic scoring will, if this process is successful, improve over time. But even today, folding the two types of models together in a systematic manner is quite possible.

Congress, and the United States more generally, would benefit from the dynamic scoring of more policy proposals. Much work remains to be done in fleshing out how exactly such a system of dynamic scoring should work in practice. Nevertheless, the obstacles to transitioning to a world where dynamic scoring becomes the norm are not insurmountable.

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***DYNAMIC SCORING: HOW WILL IT AFFECT FISCAL
POLICYMAKING?***

Testimony before the Joint Economic Committee,
United States Congress
July 28, 2015

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*The opinions expressed herein are solely my own and do not represent the views of the Baker Institute, Rice University, Tax Policy Advisers, LLC or any other organization.

I. Introduction

Chairman Coats, Ranking Member Maloney, and Members of the Committee, thank you for inviting me to present my views on the importance of dynamic analysis and dynamic scoring. In my remarks, I plan to discuss why dynamic analysis is important, comment on some of the most recent dynamic analyses and discuss why they are important, and discuss how to implement dynamic analysis and scoring to improve the budget process.

II. Why Dynamic Analysis is Important

A popular management adage is, “If you can’t measure it, you can’t manage it.” The federal government goes to great lengths to measure a number of important economic statistics to assess U.S. economic performance, including gross domestic product (GDP), inflation, unemployment, personal income, residential and non-residential construction, various measures of trade in goods and services, and others. While these statistics are generally viewed as reliable, slight changes in the way these statistics are estimated can lead to significant differences. For this reason there are often multiple statistics available to measure the same underlying economic concept, which highlights the inherent uncertainty in measuring economic performance.

Similarly, the Congressional Budget Office (CBO) and Joint Committee on Taxation (JCT) provide estimates of the budget effects of spending and tax policies in relation to baseline budget projections. For example, CBO (2015b) projects that under the extended baseline (based largely on current law), revenues will increase to 19.4 percent of GDP while spending will increase to 25.3 percent of GDP by 2040. This implies that in 2040 the deficit would equal 5.9 percent of GDP and the federal debt held by the public would be 103 percent of GDP. But CBO notes that there is a considerable amount of uncertainty in these projections. For example, there is uncertainty on what future policies will be adopted by Congress. Note that under CBO’s alternative fiscal scenario (based largely on current policy instead of current law), which some view as a more likely outcome, the national debt is projected to reach 175 percent of GDP by 2040.

There is also uncertainty based on projections of other economic variables. For example, CBO reports that if interest rates were 0.75 percent higher than in the baseline projections, federal debt held by the public would be 130 percent of GDP rather than 107 percent. If productivity growth were reduced by 0.5 percentage points relative to the baseline, then federal debt held by the public would be 125 percent of GDP rather than 107 percent. By comparison, if the rate of productivity grew by 0.5 percentage points more, the debt would fall to 91 percent of GDP, highlighting the importance of understanding the determinants of productivity growth and other economic variables, especially those that can be affected by public policy.

There is also uncertainty related to the economic effects of enacting new policies. For example, CBO estimates that including the macroeconomic effects of higher marginal tax rates, larger deficits, larger transfer payments, and increased federal investment would increase the projected deficit from 5.9 to 6.6 percent of GDP in 2040. Acknowledging these uncertainties and examining the extent of uncertainty by adopting dynamic analysis is likely to improve the budget process not ruin it.

As these projections show, it is important that we strive to implement fiscal policies that maximize economic growth. This is especially true given that the U.S. debt to GDP ratio is at a historically high level and projected to begin increasing again in the next few years. However, to achieve this goal we must be able to compare the effects of alternative policies on the economy (including inherent uncertainties). Dynamic analysis can provide this information about the effects of policy proposals on economic growth, and it is important that we use this information to better manage U.S. fiscal policy. In fact, routinely disregarding information on the macroeconomic effects of alternative proposals leads to a budget process that under values proposals that help grow the economy and over values proposals that shrink the economy. We can no longer afford a budget process that fails to maximize economic growth.

Dynamic analysis allows the budget process to account for the effect of policy proposals on the level of aggregate output (gross domestic product), which is a function of the size of the capital stock and total hours of work in the economy. In addition, dynamic analysis may be used to examine the effects of policies on wages, consumption, welfare (under certain types of modeling), distributional outcomes (both within and across generations), as well as other important variables.

While dynamic analysis will provide valuable information about the relative economic effects of alternative policies, it will not solve the fiscal crisis facing the United States. Policymakers will still face many tough decisions in the years ahead. In addition, it is important to note that preparing a dynamic analysis is no easy task and presenting and communicating the results to members, their staff, and the general public is also difficult.

III. Dynamic Analysis is Widely Applied

Note that, although it is controversial, dynamic analysis is already used on a fairly wide scale. For example, the Joint Committee on Taxation (JCT) has produced dynamic analyses of several significant tax proposals (JCT, 2003a; JCT, 2005; JCT, 2006; JCT, 2014a; JCT, 2014b). In addition, the Department of the Treasury's Office of Tax Analysis (OTA) has published dynamic analyses of the reform proposals made by the President's Advisory Panel on Federal Tax Reform (Carroll, Diamond, Johnson, and Mackie, 2006) and the proposal to permanently extend the President's tax relief (OTA, 2006). The Congressional Budget Office also publishes macroeconomic analyses of various proposals, including the President's Budget (CBO, 2003a and 2003b). Recently, JCT (2014b) provided a dynamic analysis of the effects of permanently extending 50 percent bonus depreciation and found that it would increase GDP by 0.2 percent over the budget window and would increase the business capital stock by 0.6 to 1 percent over the budget window. And most recently, CBO (2015c) examined the budget and economic growth effects that would be related to repealing the Affordable Care Act reporting that "CBO and JCT estimate that, over the final five years of the current budget window — the period from 2021 to 2025 — repealing ACA would boost GDP by about 0.7 percent, on average, relative to current law projections." The use of dynamic analysis is growing in importance and if used properly could facilitate the adoption of policies that will increase economic growth and improve U.S. fiscal sustainability. The following sections discuss a couple of specific findings from existing studies.

A. Several Studies Comparing the Macroeconomic Effects of Various Taxes

The Organisation for Economic Co-operation and Development (OECD, 2008) published a study that compares different types of taxes in terms of their effects on economic growth. The OECD study concludes that corporate taxes are the most harmful to growth, followed by personal income taxes (including payroll taxes); high marginal personal income tax rates are also shown to discourage entrepreneurial activity. By comparison, consumption taxes have smaller negative effects on growth, while property taxes are estimated to be the least harmful. These results are broadly consistent with a large body of research that argues that consumption-based taxes are generally more efficient than income-based taxes, and that increases in corporate income and dividend taxes create large distortions relative to other taxes and should be minimized. In fact, the downward pressure on corporate tax rates around the world is evidence that many countries view high corporate tax rates as a impediment to growth, especially with an increasingly integrated global economy and an increase in the mobility of the capital stock.

Diamond and Viard (2008) draw similar conclusions. They analyzed the macroeconomic effects of a permanent tax rate reduction on different types of income, including wage, interest, dividend, and corporate income, as well as the effects of a permanent increase in tax credits and deductions. They used the Diamond-Zodrow (DZ) model to simulate each of these tax rate reductions assuming that the reduction was debt-financed for 10 years and then paid for by either a reduction in discretionary transfer payments or an across-the-board tax increase. The magnitude of the tax reduction is determined so that the decrease in revenue over the ten-year period following enactment is \$500 billion with no behavioral responses. They found that the wage, dividend and corporate rate reductions led to an increase in GDP in the long run if discretionary transfer payments were reduced. The increase in GDP was largest for the reduction in dividend and corporate tax rates. Note that an increase in personal tax credits decreased GDP in this case. If the cuts were offset by an across-the-board tax increase, the effect on GDP was negative for all of the tax cuts except for the dividend tax cut, which had no effect on GDP. The largest decrease in GDP (0.8 percent) occurred for the increase in tax credits (i.e., spending through the tax system). The implication is clear — a broad-based, low-rate tax system will increase economic growth while a narrow-based, high-rate tax system will reduce economic growth.

OTA (2006) examined the dynamic effects of the President's proposal to permanently extend a variety of tax provisions enacted in 2001 and 2003. The report provides information on the macroeconomic effects of the various tax provisions as well as the aggregate macroeconomic effect of all the provisions. This information allows for a comparison of the macroeconomic effects of various policies and, if used appropriately, could prove useful in structuring efficient tax policy. For example, the OTA report analyzes the following three groups of provisions:

- Extension of lower capital gain and dividend tax rates;
- Extension of lower ordinary income bracket rates for the 25, 28, 33, and 35 percent brackets and an extension of the repeal of the phase-out of personal exemptions and itemized deductions; and,

- Extension of the increase in the child credit from \$500 to \$1,000 per child, the increased standard deduction and bracket width for joint filers, and the 10 percent rate bracket.

The OTA report showed that lowering capital gains and dividend taxes, coupled with a decrease in government consumption after 10 years, increased gross national product (GNP) by 0.4 percent in the long run as lower effective tax rates on capital income increased saving and investment. By comparison, if the revenue losses were offset by an across-the-board tax increase after 10 years the report predicts a 0.3 percent increase in real GDP in the long run. In fact, permanently extending the dividend and capital gains tax cuts increased real GNP in the long run for all of the options considered in the OTA analysis. However, as noted by OTA, changes in a variety of simplifying assumptions underlying the economic model used in this report could strengthen or weaken these results. This includes assumptions about the economic effects of dividend taxes and a variety of other economic distortions that are not included in the model.

For the base case parameter values, the report showed that permanently extending the cuts in the top four ordinary income tax brackets and the repeal of the phase-out of personal exemptions and itemized deductions increases real GDP by 0.7 percent in the long run if the tax cuts are financed by reductions in government consumption. However, if the tax cuts are financed by an across-the-board tax rate increase after 10 years the policy has a negligible impact on real GDP. By comparison, permanently extending the increase in the child credit, the increase in the standard deduction and bracket width for joint-filers, and the 10 percent rate bracket reduces real GNP by 0.4 percent if financed with a cut in government consumption after 10 years and by 1.2 percent if financed by an across-the-board tax rate increase after 10 years.

Purely from an efficiency perspective (noting that fairness, simplicity, and administrability are also important factors), a permanent reduction in dividend and capital gains tax rates is preferred to lowering the four highest ordinary income tax rates coupled with the repeal of the phase-out of personal exemptions and itemized deductions in most cases presented in the report. Similarly, a permanent reduction in dividend and capital gains tax rates or the changes to the top four brackets are preferred to an increase in the child credit, the marriage tax relief, and the 10 percent bracket, as the latter are inframarginal changes for most individuals.

JCT (2005) examined the macroeconomic effects of three proposals that each provide \$500 billion in tax reductions. The three proposals that are examined are a decrease in individual income tax rates, an increase in the personal exemption, and a decrease in the corporate income tax rate. They showed that an individual rate reduction would increase GDP by 0.3–0.4 percent in the long run if government spending was decreased to stabilize the debt to GDP ratio after 10 years. In the case of no fiscal offset, so that debt increases as a share of GDP, the individual rate reduction led to a decrease in GDP in the long run ranging from 0.2–0.5 percent. A corporate rate reduction led to an increase in GDP in the long run ranging from 0.5–0.9 percent if government spending was decreased to stabilize the debt to GDP ratio after 10 years, an increase in GDP ranging from 0.5–0.6 percent in the long run with a decrease in personal exemptions, and an increase in GDP in the long run ranging from 0.0–0.3 percent with no fiscal offset (the case in which debt increases as a share of GDP). Finally, they reported that an increase in

personal exemptions led to an decrease in GDP in the long run ranging from 0.4–0.7 percent with no fiscal offset, and that an increase in personal exemptions increased GDP in the long run by 0.1–0.2 percent if it is offset with a decrease in government spending (substituting spending through the tax code for direct spending). The results indicate that corporate tax reductions have the largest growth effects, followed by individual income tax reductions, and then an increase in the personal exemption (which reduces growth unless government spending is reduced). The order of the growth effects of the tax reductions is consistent with the findings reported in OECD (2008), Diamond and Viard (2008), and OTA (2006). This implies that to maximize U.S. economic growth policymakers should adopt a tax system characterized by low capital income tax rates, low individual income tax rates, and minimal tax expenditures. To achieve this outcome, the United States could follow the base-broadening, rate-reducing (BBRR) reform approach such as the Tax Reform Act of 1986 or a modification of the recently proposed Tax Reform Act of 2014. Alternatively, the United States could also adopt a more modern approach and move towards some form of a consumption-based tax system.

These results are important because they allow us to compare policy alternatives. For example, consider two hypothetical proposals. The first proposal raises \$200 billion in revenue by taxing capital gains and dividends and increases tax expenditures by \$200 billion by expanding child tax credits. The second proposal would raise \$200 billion by reducing child tax credits and reduce revenues by \$200 billion by lowering capital gains and dividend tax rates. The conventional estimates would view these two proposals as equivalent from a budget perspective (with some small differences showing up to account for certain timing effects). However, the above analyses clearly show that the first proposal would decrease economic growth and cause an increase in deficits, while the second would increase economic growth and lead to deficit reduction if no other policy actions were taken. It is important that we account for such differences in the policy making process. Some detractors of dynamic analysis argue that often times enactment of a certain set of policies will have a negligible macroeconomic effects, but this also is important to know (especially if it leads policymakers to modify the policies to create a positive economic impact).

B. Dynamic Analysis of the Tax Reform Act of 2014

The Tax Reform Act of 2014 was a comprehensive proposal for reform of both the corporate and personal income tax systems. The corporate income tax (CIT) reform was structured as a traditional base-broadening, rate-reducing reform. The plan would have lowered the CIT rate to 25 percent, phased in over five years, and eliminated a variety of business tax preferences, including accelerated depreciation (so that tax depreciation would approximate economic depreciation), expensing of research and development costs and half of advertising costs, and the deduction for domestic production. The plan would have not allowed the last-in first-out (LIFO) inventory accounting rule and would have permanently created a 15 percent tax credit for research and development expenses.

The reform also changed the treatment of foreign source income, including moving to a 95 percent participation exemption (territorial) system. In this case, the effective tax rate is roughly 1.25 percent with a 25 percent CIT rate. It also allowed for current taxation of foreign source income from intangibles, defined as income in excess

of 10 percent on basis in depreciable assets (excluding other subpart F income and commodities income) due to foreign sales at a minimum tax rate of 15 percent (25 percent for U.S. sales), subject to foreign tax credits. The 15 percent rate also applied to intangibles income (income in excess of 10 percent on basis in depreciable assets other than from commodities) on sales to foreign markets from the United States. The reform would have limited subpart F income to low-taxed income and created a minimum tax of 12.5 percent for foreign sales and active financial services income, in addition to the minimum tax rates noted above. There was also a one-time tax on the stock of unrepatriated profits, at an 8.75 percent rate on cash and equivalents and at a 3.5 percent rate on illiquid assets.

The plan would have also reformed the tax treatment of individual income by broadening the tax base and lowering the rates on individual income. It would have included a 10 and 25 percent rate bracket, with a 10 percent surtax on high income households (above \$450,000 for married couples). The standard deduction, child credit, and the 10 percent bracket would have been phased out for high-income households. The plan would have repealed itemized deductions for state and local (non-business) taxes, medical expenses, personal exemptions, and the alternative minimum tax. In addition, it would have limited the mortgage interest deduction. Capital gains and dividends would have been taxed as normal individual income after a 40 percent exclusion.

Diamond and Zodrow (2014) examine the dynamic effects of a variant of TRA 2014 proposed by then House Ways and Means Committee Chair Dave Camp. They find that TRA 2014 would increase GDP by 1.2 percent after five years, by 2.2 percent after 10 years, and by 3.1 percent in the long run. The long-run increase in GDP is primarily driven by a 5.0 percent increase in the capital stock and a 0.3 percent increase in labor supply, driven by significant reductions in corporate income tax rates that in turn raise revenues in part by reversing income shifting abroad by U.S. multinational companies. Such an increase in GDP, which is simulated under a revenue neutral fiscal policy, would lower the debt to GDP ratio, as growing income makes it easier to service a given level of debt. JCT (2014a) and the Tax Foundation (Entin, Schuyler, and McBride; 2014) also examined the macroeconomic effects of TRA 2014.

The various analyses of TRA 2014 imply that the macroeconomic effects of a BBRR reform depend very much on both the details of the specific reform proposal and the context in which it is imposed. In particular, these results indicate that a BBRR reform is more likely to result in positive macroeconomic effects if (1) the initial amount of income shifting is large and is reduced significantly when the statutory CIT rate in the United States declines, (2) accelerated depreciation is retained instead of being used as a base broadening provision, and (3) the BBRR reform includes a move to a territorial system of the type analyzed in TRA 2014, that is, one that includes anti-base erosion provisions that are sufficiently effective that the tax sensitivities of international capital and income shifting are the same as prior to the enactment of the reform.

IV. Implementing Dynamic Analysis to Improve the Budget Process

As noted above, dynamic analysis has already been used on wide scale. However, there are a number of important issues regarding how to use dynamic analysis to improve the budget process. House Rule XIII.8 (sections a through d) requires that JCT and CBO

should “to the greatest extent practicable, incorporate the budgetary effects of changes in economic output, employment, capital, and other macroeconomic variables resulting from such legislation” if the legislation “has a gross budgetary effect of 0.25 percent of the current projected GDP” or is “designated as such by the chair of the Committee on the Budget” for spending proposals or the chair or vice chair of the Joint Committee on Taxation for revenue proposals.

One of the primary goals of dynamic analysis should be to compare the macroeconomic effects of various provisions. While measuring the economic effects of a base reform proposal for the purpose of determining the revenue feedback is important, much of the additional information that could be gleaned from dynamic analysis would not be realized if dynamic scoring was the only objective.

Analyzing every provision separately would be counterproductive, as this would be an overwhelming burden on staff resources. In addition, this would require more legislative foresight so that JCT has enough time to produce various dynamic analyses in the course of developing legislation. While examining every provision on its own would be impossible, there may be times when it makes sense to examine a single provision. For example, JCT provided a dynamic analysis of the effects of permanently extending 50 percent bonus depreciation and found that it would increase GDP by 0.2 percent over the budget window and would increase the business capital stock by 0.6 to 1 percent over the budget window. Note that a temporary extension of this provision would have different economic effects and such an analysis would be of interest. We must avoid only analyzing proposals with positive economic effects and not analyzing proposals with negative economic effects.

Dynamic analysis should examine and present results on the effects of groups of related provisions separately from the entire proposal for large policy reforms. For example, it would be interesting to break TRA 2014 into three dynamic analyses examining the effects of corporate reform, a move to territorial, and the effects of the individual income tax reforms (and it may be of interest to break these apart as well). Providing estimates of parts of larger reforms would allow for more outside feedback and analysis and would reduce the extent to which the results seem to emanate from a “black box.” In addition, it may be informative to examine the effects of groups of provisions on major economic aggregates including employment and wage income, capital, consumption, and welfare. Producing dynamic analysis on smaller groups or different types of proposals will add more information and make the analysis more reliable. JCT (2005) provides an example of this type of analysis.

Debt service costs in both the short and long run are generally included in dynamic analysis but are not included in conventional cost or revenue estimates. This is important because budget gimmicks within the budget window can obscure the long run effects of policies, especially policies that are debt-financed, temporary, or phased-in late in the budget window.

Dynamic analysis should also be applied to spending proposals. However, the demand-side effects of spending and tax proposals should not be considered, especially for permanent proposals. In cases in which the purpose of the policy is purely to impact short-run demand, the long-run effects of debt financing such expenditures should be carefully examined.

Macroeconomic aggregates are not the only information that should be provided to policymakers. Some measure of welfare should also be provided in addition to the macroeconomic aggregates. This is important because positive macroeconomic effects can be associated with negative welfare effects for U.S. residents (Diamond and Viard, 2008). Dynamic analysis of distributional effects (both within income groups and across generations) are also often of interests for certain proposals.

The extent of the uncertainty contained in a dynamic analysis must be acknowledged. For example, this would include discussing the sensitivity of the results to various assumptions about parameter values, the assumptions underlying the economic model, whether the policy was financed by changes in government spending, taxes, or government debt, and assumptions about the reactions of other entities such as the Federal Reserve, state governments, and foreign countries.

Dynamic analysis should be timely so that it can be used effectively in the formulation of policy. Public disclosure is imperative and as much information as possible should be released to the public. At a minimum, enough information should be released so that outside entities could replicate the work. This will ensure that the process is seen as fair and open and will serve as a check on those who provide the estimates.

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Written Testimony of John L Buckley

Joint Economic Committee

July 28, 2015

INTRODUCTION

Chairman Coats, Ranking Member Maloney, I want to thank you and the other Members of the Committee for the opportunity to appear before you today.

I doubt that any Member of this Committee would disagree with the proposition that expanding economic opportunities in this country should be one of our most important priorities. An expanding economy would make our long-term budgetary challenges less daunting. It also could reverse the loss of employment opportunities and wage stagnation that threaten the well-being of many American families. Therefore, there is no question that an analysis of the macroeconomic effects of major Federal legislation should occur. I believe that such analysis should cover all types of major legislation. You cannot have a modern economy without adequate transportation or other infrastructure. Investments in basic research are required for this country to remain competitive in the world economy. Information about the macroeconomic benefits of those government investments should be part of the legislative process.

In summary, I believe that macroeconomic analysis should play an important role in the design of legislation, but should not affect the official measure of its budgetary impact. But more importantly, the macroeconomic analysis, however used, should be reality based. All of the macroeconomic models used by the Congressional Budget Office (CBO) or staff of the Joint Committee on Taxation (JCT) are extraordinarily complex mathematical formulae. However, it is not possible to accurately reflect our complex economy and the vagaries of human behavior in a mathematical formula no matter how complex it is. Therefore, the models make simplifying assumptions that are often speculative or counterfactual in the sense that they are inconsistent with

observable facts. Since those assumptions, not the complex reality of our economy, determine the results produced by the model, they may not accurately predict the real-world impacts of legislation.

In addition to being based on those counterfactual or speculative assumptions, I believe that the economic principles underlying all of the macroeconomic models developed by the CBO or JCT are increasingly divorced from the reality of a world where companies, responding to market forces, are moving production offshore where there is a virtually unlimited supply of labor and capital. In such a world, I believe that enhancing the competitiveness of US businesses and workers through public and private investments in physical and intellectual capital is the key to long-term growth.

In simple terms, the question is whether the largest economic challenge faced by this country is the lack of jobs that can support a middle-class family or too few people looking for work. I believe most would agree that it is the lack of job opportunities. Yet, the macroeconomic models discussed today assume that expanding the number of people looking for work (labor supply) will result in increased economic growth. Most handle the problem of unemployment by simply assuming it does not exist.

DYNAMIC SCORING NOT APPROPRIATE FOR OFFICIAL SCOREKEEPING.

Budget Numbers Could Lose Credibility.

Dynamic scoring starts with the conventional estimate of the cost of the legislation and then reduces that cost by estimates of the increased revenue that could result from the legislation's impact on the economy. Reducing the reported cost of a policy change or expenditure by the potential benefits of the policy change or expenditure is a luxury not available to corporations. Corporations are not permitted to reduce the cost of their investments by the anticipated future benefits no matter how certain those future benefits appear to be. Even with the scrutiny of independent auditors, the risk of harm to

investors relying on overly optimistic projections is too great. That logic is even more compelling in the case of dynamic scoring for legislation.

First, there is little question that the dynamic scoring estimates are more uncertain than conventional cost estimates. They require judgment calls by the staff on factors like the elasticity of labor supply where there is little empirical evidence to guide the choice from a wide range of possibilities. In the case of tax legislation, they require predictions about future actions by the Federal Reserve. Some models, including some used by the CBO and JCT, require assumptions concerning future actions by the Congress. The CBO in its report on the budgetary and economic effects of repealing the Affordable Care Act (CBO report on repeal of the ACA) acknowledged that the “estimates of the macroeconomic effects and their consequences for the federal budget are highly uncertain.”

Second, there is no consensus in the economic community on a single model and there are many opinions on basic assumptions used in the models. That lack of consensus is reflected in the fact that the CBO and JCT use different models and sets of assumptions. The fact that the official Congressional scorekeepers do not have a common approach could result in confusing and inconsistent budget numbers.

Third, dynamic scoring requires a single cost estimate even though the CBO and JCT have consistently stated that no one model can adequately explore the implications of major changes in fiscal policy. Even Professor Diamond in his report for the Business Roundtable on the implications of the Camp tax reform plan, stated that the results of any one model are “at best suggestive”.

Fourth, the results of dynamic scoring vary dramatically depending on choice of model and assumptions and there is little objective evidence to guide CBO or JCT in deciding on a single model or set of assumptions. The JCT macroeconomic analysis of the tax reform plan of former Ways and Means Chairman Camp showed a wide range of possible outcomes. Depending on the model and set of assumptions, the predicted increase in real GDP after 10 years was as little as 0.1% and as large as 1.6%.

Finally, the perception, if not the reality, of political interference in budget scorekeeping may be inevitable. Since there is little objective evidence justifying choice of method or assumptions, it might be difficult for the staff to

justify their approach when confronted by a Member not happy with their conclusion. In 1995 Congressional testimony, former Federal Reserve Chair Alan Greenspan cautioned that the use of controversial scoring procedures like dynamic scoring could cause financial markets to lose confidence in the integrity of budget scoring. If that happened, "the rise in inflation premiums and interest rates could more than offset any statistical difference between so-called static and more dynamic scoring."

Implications of Federal Budget Constraint.

Many models, so called forward-looking models, simply do not work when the federal budget is on an unsustainable path as is the case today. Those models typically produce the largest growth projections. In the past, the models used by the CBO were subject to that constraint. The JCT has used one model with that constraint and one without. Professor Diamond's model is subject to that constraint.

To avoid that constraint, the analysts simply assume that the Congress has or will enact deficit reduction legislation. In some models, there is the assumption of a detailed deficit reduction plan. Other models assume a less detailed plan. The details of the deficit reduction plan can affect the projections.

I would hope that we can all agree that no official budget estimate for any legislation should dependent on an assumption of future Congressional action. In addition, Congressional staff should not be placed in the position of making predictions of how the Congress will respond to the deficit issue.

MODELS POOR POLICY GUIDES

Counterfactual Assumption of Economic Equilibrium Critical to Results.

All of the dynamic scoring models used by the CBO or JCT are based on growth models that contain two basic assumptions. First, they assume that the long-term constraint on economic growth is supply of labor and capital. An

increase in those factors of production will result in an increase in potential economic activity.

Second, they assume that the supply and demand for labor and capital are in equilibrium. As a result, they assume that there is no such thing as involuntary unemployment; individuals without jobs are assumed to have voluntarily left the workforce. Based on that assumption, the high rate of unemployment in the recent recession was due to the collective decision of millions of Americans to take an unpaid vacation. Some models, like one of the JCT models, do allow for temporary periods of unemployment, but they assume that prices will adjust (that is, wage rates will fall) to bring supply and demand for labor into balance.

The assumption that the economy is in equilibrium is critical to the projections of increased growth from increases in the factors of production. For example, the CBO report on repeal of the ACA assumes a large increase in labor supply due to the fact that 24 million individuals would lose health insurance as a result of that repeal. Those individuals may seek employment to gain access to employer-provided health insurance or may work harder to pay health care expenses no longer covered by insurance. That increase in labor supply is largely responsible for the report's projection of increased growth. An increase in labor supply can result in greater economic growth only in an economy without unemployment.

The question is how you can assume that there will be jobs for the additional number of individuals seeking work. The answer is one that few wish to acknowledge. Unless there are other provisions increasing the productivity of the labor force, the models assume that price adjustments (again wage reductions) will bring the supply and demand for labor back into balance.

For example, the JCT report on the macroeconomic effects of the Camp tax reform plan concluded that the net effect of its rate reductions and repeals of domestic investment incentives would increase the cost of capital for domestic firms and result in lower levels of business investment than those projected under current law. The reduction in business investment would reduce the productivity of the economy. Since there was a negative effect on productivity, the president of the Tax Foundation (a conservative organization focusing on tax issues) stated in testimony before a subcommittee of the House Ways and Means Committee that the Camp tax

reform plan would increase economic growth because it would result in more individuals working for lower wages.

The assumption of an economy in equilibrium also permits the models to ignore the potential disruptive effects of the legislation. For example, the CBO report on repeal of the ACA projects that repeal would result in 28 million individuals losing health insurance. One can only assume that 28 million individuals losing health insurance would cause some disruption and reduction of employment by health care providers and insurers. I believe that, in the case of any serious legislative consideration of such repeal, the potential disruption would be an important issue. But, that issue is not even mentioned in the CBO report because the assumption of equilibrium means that workers losing jobs in the health care industry are assumed to seamlessly move to jobs in other sectors.

Similarly, in 2006, the JCT did a macroeconomic analysis of a tax reform plan that, among other things, repealed all existing benefits for owner-occupied housing. The repeal of housing benefits was assumed to increase economic growth by reducing investment in owner-occupied housing, thus increasing funds for other more productive investments. The JCT acknowledged that the proposal would reduce housing prices, with potential consequences not accounted for in the macroeconomic models. This is another example where major macroeconomic consequences are ignored by these models.

Time to Examine Underlying Principles

An article in 2011 by Sandile Hlatshwayo and Nobel Laureate economist Michael Spence¹ suggests that the economic theories which are the basis of models used in dynamic scoring have little relevance now when “the global economy has an abundance of human resources and they are becoming more accessible as time goes on.” Those resources are becoming more accessible because multinationals have become adept at creating and managing global supply chains and they are getting better all the time.

The Spence article looks at employment growth in the US between 1990 and 2008 in the tradable sector of the economy (the sector subject to cross-border

¹ The Evolving Structure of the American Economy and the Employment Challenge, Council on Foreign Relations.

competition) and the non-tradable sector. Not surprisingly, virtually all of the domestic employment growth during that period (97.7%) occurred in the non-tradable sector, with employment in government, healthcare and retail accounting for most of that growth. The article concludes that there is “a long-term structural challenge with respect to the quantity and quality of employment opportunities in the United States” since continued large employment growth in those non-tradable sectors is unlikely.

In the opinion of the authors, the domestic employment challenge is not the result of market failures. Multinational enterprises moving jobs overseas are doing exactly what the market is telling them to do. A tax reform plan or other legislation based on the primacy of market outcomes will not reverse the declines in domestic manufacturing employment. Indeed, a tax reform plan like the Camp plan could worsen domestic employment challenges by repealing broad-based incentives for domestic investment under the guise of economic neutrality while liberalizing tax rules for the overseas operations of US multinationals. Those provisions would create a playing field that tilts in favor of investments overseas.

The Spence article suggests that we may have employment challenges that call into question all of the equilibrium assumptions that are part of the dynamic scoring models.

Counterfactual Assumptions Concerning Human Behavior.

Increasingly, there are differences among economists on how to model human behavior. Until recently, the prevailing view has been that individuals act rationally to optimize their economic well-being. This theory generally is part of the models being discussed today. Forward looking models take an additional step. They assume that individuals have the benefit of being able to accurately predict future economic conditions and future legislation or other governmental actions.

Those assumptions are critical for predictions of increases in labor supply or savings from tax rate reductions or savings incentives. Unless people always act to optimize their economic well-being and plan ahead for a long time horizon, rate reductions or savings incentives may have limited effect.

The question is whether these assumptions have any basis in fact. There is a growing school of economics (behavioral economics) that insists that we should analyze economic issues based on the actual behavior of individuals, not the assumed optimizer. They can point to many examples, large and small, where individuals for many reasons do not act as assumed in these models. For example, most individuals have far too little in retirement savings, notwithstanding the broad expansion of retirement savings incentives over the last 35 years. If the assumptions were an accurate reflection of human behavior, the financial crash of 2007-2008 could not have happened.

CONCLUSION

Most of the tax legislation enacted after 1980 and before 2009 was based on the supply side theories and notions of economic efficiency that are the foundation of the dynamic scoring models. Essentially, we conducted a 30 year experiment in the real-world validity of those theories. The results of that experiment are quite clear; projections based on those theories consistently have overstated the real-world impact of tax legislation.

The 1981 Reagan tax cut was accompanied by projections that it would increase economic growth by encouraging greater savings and labor supply. Those predictions did not come true. The personal savings rate declined after the 1981 tax legislation. A report by Martin Feldstein, the chair of President Reagan's Council of Economic Advisors, concluded that there was no support for the proposition that the recovery in the 1980's reflected an increase in labor supply induced by the reduction in tax rates. Instead, he credited expansionary monetary policy as the primary cause of the expansion.

Many economists predicted that the Tax Reform Act of 1986, with its dramatic rate reductions, would increase economic efficiency and contribute to increased economic growth. Those predictions seemed especially warranted since the rate reductions were financed to a significant extent by eliminating clearly distortive, nonproductive, tax-shelter activity.

The University of Michigan commissioned a study of the economic impact of the 1986 reforms by a group of prominent economists, which included both proponents and opponents of the 1986 reforms. Their almost unanimous conclusion was that the real world effects of the 1986 reform were substantially less than predicted.

Contrary to predictions of negative economic consequences, the 1993 tax increases were followed by one of the strongest periods of economic growth in recent history.

The performance of our economy during the recent Bush presidency was quite inconsistent with the positive economic predictions that were used to support enactment of the 2001 and 2003 tax reductions.

None of this should be surprising. Models based on faulty assumptions that do not reflect the realities of our complex economy will tend to produce faulty predictions. Unless we are willing to compete as a low wage economy, relying on market forces and an expanding workforce is not sufficient for this country to be competitive in the world economy.

I would like to thank the Committee, once again, for inviting me to testify today and would be happy to answer any questions you may have.



Dynamic Scoring and Infrastructure Spending

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July 6, 2015

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Executive Summary

We review recent trends in federal infrastructure spending and the policy case for dynamic scoring of revenue and spending legislation. The use of dynamic scoring depends upon the magnitudes of near-term impacts on economy-wide spending and the long-run impacts on productivity. We conclude that federal infrastructure investment should be dynamically scored.

A simple example suggests that \$100 billion in new infrastructure spending could generate an extra \$62.5 to \$165.5 billion in national output over the next twenty years, based on a range of scenarios. Assuming a 20 percent effective tax rate, this \$100 billion infrastructure investment would generate a 20-year revenue offset ranging from \$12.5 to \$33.1 billion.

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Introduction And Overview

Dynamic Scoring Allows For A More Complete Analysis Of The Macro Impact Of Proposed Policies And Legislation

Modern economies rely on networks of transportation and other infrastructure. Many commentators have expressed concern over the quality of the U.S. infrastructure, leading to calls for increased federal infrastructure spending.¹ These calls, however, have run directly into federal budgetary realities: a large amount of debt, entitlement programs that consume ever-greater fractions of budget resources, and no broad-based desire to raise taxes.

In this setting, dynamic scoring becomes important.² Conventional budget scoring incorporates the full range of private sector work, saving, and other responses to new policies like infrastructure spending. It does not, however, take into account the impact of spending on the overall size of the economy. Dynamic scoring incorporates these growth effects, permitting policymakers to distinguish between policies beneficial and detrimental to growth.

In theory, the logic behind dynamic scoring is irrefutable. Most legislation has economic consequences, and those consequences should be considered when assessing or ‘scoring’ the budget impact of that legislation. Until now, a combination of political pressures and economic disagreements has effectively pushed dynamic scoring to the sidelines. Depending on whether it was applied to spending legislation or tax changes, dynamic scoring could potentially be used

to support the agenda of one side or another.

At the same time, normally confident economists have been forced to admit that different economic models and assumptions applied to the same legislation could produce widely differing results.

\$100 billion in new infrastructure spending could generate an extra \$62.5 to \$165.5 billion in national output over the next twenty years

The 114th Congress has adopted a budget resolution that requires dynamic scoring to be used for “major legislation.” Major legislation is defined as tax or mandatory spending bills that lead to a change in revenues, outlays, or deficits of more than 0.25 percent of GDP.³

In general, infrastructure bills would not be dynamically scored because they are discretionary spending, and the dynamic scoring rules are built on the Budget Act’s requirement that the Congressional Budget Office (CBO) provide cost estimates for tax and mandatory spending bills,

but not discretionary spending bills. In addition, the size of the changes involved would likely be less than 0.25 percent of GDP.

However, House leadership can designate other bills for dynamic scoring. In this paper, we argue that dynamic scoring should be extended to major infrastructure legislation.

This report makes both economic and political arguments in favor of dynamic scoring for infrastructure legislation. First, in the aftermath of the Great Recession, economists have focused on getting a better understanding of the economic impact of infrastructure investments. In particular, in 2014 the International Monetary Fund released a broad study of the short-term and medium-term economic impact of infrastructure investments across both developed and developing countries. Also, in 2014 two economists, Pedro Bom and Jenny Ligthart, published a meta-analysis of 68 previous studies of the long-term productivity impact of public infrastructure spending.

Using these studies, this report develops a range of reasonable multipliers that can be used for dynamic scoring of infrastructure spending. In particular, section five shows how they can be used to estimate the budget impact of an infrastructure bill, both short-term and long-term. Based on these reasonable multipliers, \$100 billion in new infrastructure spending could generate an extra \$62.5 to \$165.5 billion in national output over the next twenty years, taking the initial investment into account. Assuming a 20 percent effective tax rate, this \$100 billion infrastructure investment would generate a 20-year revenue offset ranging from \$12.5 to \$33.1 billion.

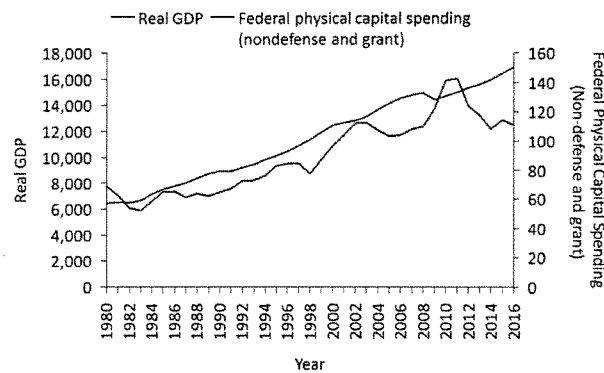
The remainder is organized as follows. Section two reviews trends in federal infrastructure spending. Section three provides a framework and empirical evidence for the impact of federal investment spending on the near-term path of total spending in the economy. Section four provides a corresponding analysis for the long-run productivity impacts. Section five provides an example of dynamic scoring of a stylistic \$100 billion infrastructure expenditure. Section six is a summary with conclusions.

A Review Of Federal Infrastructure Spending

Federal Infrastructure Spending Has Declined At The Time When The United States Needs Renewed Investment Most

Until recently, federal spending on major nondefense physical investments, both direct and indirect, has kept pace with the growth of the overall economy. As *Figure 1* shows, from 1981 to 2011, the federal spending on nondefense major physical investments and grants for physical investments, adjusted for inflation, rose by 127 percent. Over the same stretch, real GDP rose by 128 percent.

Figure 1: Federal Capital Spending Lags Real GDP

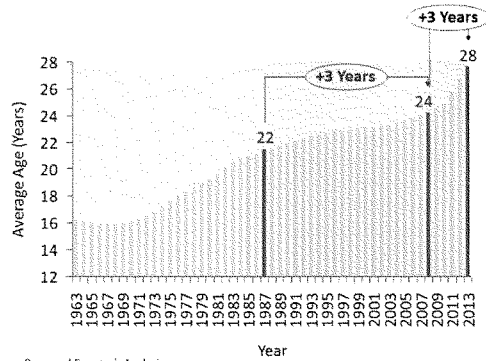


Source: Office of Management and Budget
2015-2016 are estimates based on FY2016 budget proposal; dollars in billions

But since 2011, federal direct and indirect spending on infrastructure and other physical capital has dropped far below the 20-year trend, measured in 2009 dollars. In part that decline is a natural fall-off after the big surge of spending in 2010 and 2011, when most of the funds from the American Reinvestment and Recovery Act (ARRA) of 2009 were dispersed. The concern is that if federal investment in physical capital continues at too low a level for a prolonged period it will undermine the quality of the infrastructure.

For example, consider highways and streets. The Bureau of Economic Analysis tracks the average age of highways and streets across the country, accounting for renovation. While one would expect our motor infrastructure to be aging as the rate of new building declines, *Figure 2* shows that the rate of aging has accelerated over the past few years.

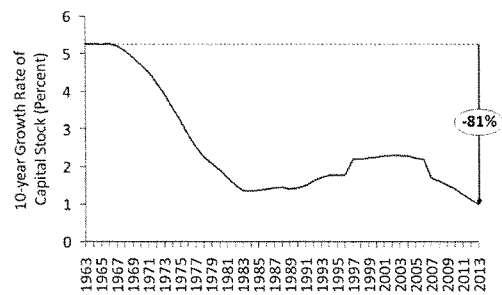
Figure 2: Highways and Streets Get Older Faster



Source: Bureau of Economic Analysis

Figure 3 looks at infrastructure from another angle. The BEA regularly estimates the inflation-adjusted dollar value of the stock of highways and streets. It can be thought of as a measure of the amount of highways and streets the US has, adjusting for depreciation. By this measure our highway and street infrastructure has only grown under 1 percent a year over the past ten years, the slowest rate since at least the 1960s.

Figure 3: Highways and Streets Grow Slower



Source: Bureau of Economic Analysis

Short-Run And Medium-Run Impacts Of Infrastructure Spending On Gdp

While Short-Run Impacts Can Be Muted, Infrastructure Spending Has Medium-Term Multipliers And Long-Term Productivity Increases

Conceptual Issues

Dynamic scoring requires a systematized way of measuring the impact of infrastructure spending on the economy. In particular, if the CBO has information on how much a \$1 increase in federal infrastructure spending raises aggregate spending and thus Gross Domestic Product (GDP), it can use the information to estimate the additional tax revenue that will be generated as a result. Traditionally the impact of government spending (such as infrastructure) on demand in the economy is summarized by a concept known as “the multiplier.” A multiplier of 1 means that \$1 of spending generates an increase of \$1 in GDP. A multiplier of 2 implies that \$1 of spending generates an increase of \$2 in GDP, while a multiplier of 0 implies that \$1 of spending generates no increase in GDP.

The size of the multiplier depends crucially on the state of the economy. If the economy is in a deep slump, building new infrastructure can generate jobs and income that have spillover effects to the rest of spending in the economy. In such a circumstance, larger multipliers are possible. If labor and capital in the economy are already fully employed, the multiplier is likely to be zero.

Moreover, of all the types of stimulus spending...the CBO study estimates that infrastructure spending had one of the highest potential multiplier effects on employment and output

To be sure, the multiplier does not address the critical question of the timing of economic impact, which could be immediate or drawn-out over several years. However, for the purposes of dynamic scoring, the multiplier does provide a useful summary.

The magnitude of the demand impact of infrastructure spending was hotly debated

during the Great Recession and its aftermath. Obviously the spending to upgrade a highway or rebuild a bridge generates construction jobs and jobs at suppliers. But as the United States and other countries implemented large fiscal stimulus packages such as the American Recovery and Reconstruction Act (ARRA) to combat the Great Recession, there were natural questions about how much additional growth such spending generated, above and beyond the construction jobs directly connected with the spending.

Evidence

In its latest report on the economic impact of ARRA, the Congressional Budget Office specified a range of multipliers from 0.4 to 2.2 for the impact of transfer payments to state and local governments for infrastructure (CBO 2015). The midpoint of this range, 1.3, would imply that each \$1 of spending in ARRA generated \$1.30 in GDP over several quarters. Since short-term interest rates remain very low, the CBO report notes that crowding out of other employment growth or investment in other areas of the economy was minimal.

Moreover, of all the types of stimulus spending (direct purchases, consumer subsidies, tax credits), the CBO study estimates that infrastructure spending had one of the highest potential multiplier effects on employment and output. According to the CBO report, their multiplier estimate represents:

“The estimated direct and indirect effects on the nation’s output of a dollar’s worth of a given policy. Therefore, a provision’s multiplier can be applied to the budgetary cost of that provision to estimate its overall impact on output.”

Another recent authoritative set of multiplier estimates comes from the International Monetary Fund (IMF, 2014). In 2014, the IMF published a very extensive investigation of the economic impacts of infrastructure spending, across both developed and developing countries. Their results suggested that developed countries have a short-term investment spending multiplier of about 0.4 and a medium-term investment multiplier of about 1.4.

However, the IMF study also emphasizes that public investment has different impact depending on the macroeconomic environment.

“During periods of low growth, a public investment spending shock increases the level of output by about 1½ percent in the same year and by 3 percent in the medium term, but during periods of high growth the long-term effect is not statistically significantly different from zero.”

The macroeconomic impact also depends on how wisely countries spend their money, with bigger impacts accompanying greater efficiency. The report concludes that

“In countries with high efficiency of public investment, a public investment spending shock increases the level of output by about 0.8 percent in the same year and by 2.6 percent four years after the shock.”

Multiplier For Dynamic Scoring

So given the CBO and IMF estimates, what's a reasonable value for the infrastructure multiplier for the purposes of dynamic scoring? The midpoint of the CBO's range, 1.3, is very close to the IMF's medium-term estimate of 1.4.

However, we note that the actual multiplier could be quite a bit higher or lower depending on the macroeconomic environment. Moreover, predicting the state of the economy even a couple of years ahead is not an easy task.

Therefore, we suggest using a conservative medium-term multiplier of 0.8 for the purposes of dynamic scoring. In other words, \$1 of additional infrastructure spending adds \$0.8 to GDP if there is sufficient slack in the economy. As we note in section 5, the medium-term multiplier could be even lower as the economy approaches full employment.

Should Dynamic Scoring Include Long-Run Impacts On Productivity And GDP?

Dynamic Scoring Must Incorporate Both Short And Long-Term Impact Of Infrastructure To Capture Potential Productivity Increases

Conceptual Issues

So far we have focused on the impact of infrastructure on GDP in the short and medium run. Higher GDP obviously generates more tax revenue, which affects the ultimate net budget cost of infrastructure spending.

However, infrastructure spending could also have a long-term impact on productivity that should be considered. Over the long-term, higher productivity—the ability to generate more output and income from each dollar of capital or hour of work—is the key to higher labor earnings and improved standards of living. Because higher productivity is so central to economic growth, it must be an explicit concern – rather than a presumed outcome – when contemplating increased infrastructure spending. The notion that investing in infrastructure will generate productivity has an intuitive appeal: imagine an economy with trucks but no roads, or trains and no tracks. Moreover, there are countless

High-productivity infrastructure investments can generate improvements in economic well-being by increasing connectivity or reducing congestion

testimonials across the country asserting that a new road, or airport, or other project generated a boom in economic activity.

High-productivity infrastructure investments can generate improvements in economic well-being by increasing connectivity, reducing congestion, or providing a necessary productive input. If so, this is a critical dimension of improving long-term employment, allowing labor to enhance its productivity at lower cost and encouraging private capital investments in structures, equipment, and technologies to reap higher returns from American industry.

But there are reasons to be cautious as well. First, the test for a high-productivity public investment is that it should generate a rate of return to society that exceeds the market return in the private sector. The resources for any public investment are ultimately drawn from the private sector through taxes and fees, or in some cases by borrowing from the private sector. In each case, the dollars used to make these investments constitute foregone opportunities to make other market investments.

To meet a productivity test, transportation investments should have a greater impact in terms of raising future standards of living than other uses of funds as measured by the return on other market investments. Thus, to ensure the best use of taxpayer dollars, government must channel funding to the projects that offer the highest returns to society.

The notion that investing in infrastructure will generate productivity has an intuitive appeal: imagine an economy with trucks but no roads, or trains and no tracks

That means choosing programs that do the most to enhance long-term productivity. A second concern is that politics interfere with making sure that the right projects are chosen. Not every road, high-speed rail, or water project can meet the test. Will public policy actually consist of a portfolio of well-selected and thoughtfully targeted investments that may make a substantial contribution to aggregate economic productivity?

A third issue is that any shift in resources creates losers as well as winners. A dollar spent on any project means a dollar less to spend on another project. In an environment of finite resources, funding infrastructure projects will generate some productivity, but at the expense of jobs that could have been created in other sectors had the money been used differently. This is why reform to direct government spending to the most productive investments is so crucial. Even if infrastructure always raises productivity, its net effect on the economy as a whole—

taking into account the benefits that will be foregone as a result of reduced public spending in other areas of the economy—will be positive only if government investments are rigorously selected to meet productivity criteria.

Shifts of investment and employment occur not just across industries and sectors, but also across counties and states. Even a sub-optimal investment is likely to be able to show some positive output impacts, especially in the short-term, from the perspective of the winning state or city. But from a national perspective, and over time, these gains could be—and often are—outweighed by losses elsewhere. Federal infrastructure policy should guide federal dollars so as to produce a net gain for the economy as a whole, rather than for one area or region in the short-term.

The construction of the Interstate Highway network, for example, created jobs near Interstate interchanges as new and existing businesses were drawn to locations where they could take maximum advantage of the accessibility afforded by the new highway system. Towns that were bypassed by the Interstates, however, lost jobs as some of their businesses moved to these new locations and as other businesses that stayed “died on the vine” because they could no longer compete. Nevertheless, the federal investment creating the Interstate Highway network was justified because overall gains exceeded overall losses.

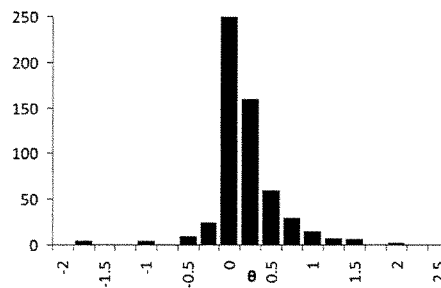
Evidence

The modern literature on the productivity impacts of public infrastructure was spawned by the work of David Aschauer [1989]. In effect, he assumed that GDP is produced by combining the usual inputs – private-sector capital and labor – and inputs of public-sector capital. For the United States, he concluded that infrastructure had a very strong positive effect on private-sector productivity – stronger than the impact of private-sector capital. His specific estimate indicated that a 10 percent rise in the public-sector capital stock would raise the level of productivity by 3.9 percentage points. Put differently, the so-called “elasticity” of productivity with respect to public capital is 0.39. If productivity impacts are as large as the Aschauer results implied, federal infrastructure outlays would have a lasting impact on the path of real GDP, personal incomes, and the federal budget.

Unfortunately, the Aschauer finding does not hold up. Holtz-Eakin [1994] quickly showed that the result was an example of reverse causality; i.e., during periods of high-productivity growth, more spending on infrastructure occurred. Using data from the 50 U.S. states, he found little to no evidence of lasting productivity impacts.

A large amount of empirical research followed. The histogram below, reproduced from Bom and Ligthart [2014] summarizes 578 estimates from 68 studies that cover various time periods, nations or states, levels of government (municipal, state, federal), and types of public capital.

Figure 4: Distribution of Productivity Elasticities



Source: Bom and Ligthart, 2014

The histogram shows the distribution of θ , the elasticity defined above. As one can see by inspecting the figure, there are large positive (over 2.0) and large negative (below -1.5) examples in the literature. However, the bulk of the estimates cluster closely around zero. The overall shape of the distribution does suggest a greater chance of positive impacts than negative ones, so a consensus estimate of the elasticity might be slightly above zero.

Long-Term Multiplier For Infrastructure Spending

Given the empirical evidence, it's reasonable to include a small but nonzero productivity effect when the CBO does dynamic scoring. The latest papers suggest that the elasticity of output with respect to public capital is between 0 (for bad project selection) and 0.1 (for good selection). To be conservative, that suggests it is reasonable to use an elasticity of 0.03 for dynamic scores.

The Implementation Of Dynamic Scoring For Infrastructure

Dynamically Scoring Infrastructure Requires The Assumption Of Conservative Multipliers To Balance Macroeconomic Volatility

Unlike most pieces of federal tax or spending legislation, economists have a very good understanding of the channels by which an increase in federal infrastructure spending can affect tax revenues. As shown in section 3, the evidence suggests that the multiplier is greater than zero, implying that a temporary increase in infrastructure spending will lead to a temporary increase in jobs and wages paid, which in turn will temporarily increase the tax revenues collected by the federal government. As shown in section 4, the evidence suggests a small but non-zero productivity effect, implying that temporary infrastructure spending will lead to a small but long-lasting increase in output, which in turn will lead to a small but long-lasting increase in federal tax revenues.

In this section we outline a simple procedure for dynamically scoring an increase in federal infrastructure spending. Obviously the CBO would use a far more sophisticated model. However, the procedure discussed here has the key elements of dynamic scoring for infrastructure.

Structure Of Procedure

To generate an estimate of the true impact of infrastructure spending, three numbers are needed: The short-term infrastructure multiplier M , the long-term productivity elasticity θ , and the tax revenue generated by a unit of output (the effective tax rate), T . Based on the evidence, for this simple procedure we use:

$$M=0.8; \theta=0.03 \text{ and } T=0.2.^4$$

Are these numbers reasonable? If the multiplier is 0.8, then \$100 billion worth of additional infrastructure spending will yield a temporary increase of \$80 billion of GDP, spread out over several quarters. So there's some crowding out from the spending, but not enough to eliminate the effect of the infrastructure spending on the economy. Under the assumption that 20 percent of the \$80 billion gain in GDP is returned in federal taxes, that yields \$16 billion in revenue.

However, notice that the 16 percent offset (\$16 billion in revenue offsetting \$100 billion in spending) will depend on the state of the economy. The closer the economy is to full employment, the greater the possibility of significant crowding out and the smaller will be the offset. Potentially, if the economy is at full employment, the short-run demand-side offset will be close to zero. The percentage offset will also depend on the size of the spending program. A \$1 trillion program would produce considerably more crowding out of private sector activity

and would fall well short of generating \$800 billion in additional GDP. Thus, it would not be expected to provide an offset of \$160 billion.

What about the productivity elasticity? Government general capital is roughly \$10 trillion, according to the BEA, so \$100 billion for additional infrastructure spending is roughly a $(100/10000 =)$ 1.0 percent increase. Using the productivity elasticity of 0.03, that suggests that the level of productivity and output eventually rises by 0.03 percent. If GDP is \$18 trillion, then \$100 billion in extra infrastructure spending generates \$5.4 billion in extra output per year, assuming an immediate effect of infrastructure spending on productivity. Assuming that the effective tax rate is 20 percent, that means the yearly revenue offset would be roughly \$1.1 billion.

This long-term productivity offset is not affected by the state of the economy. Moreover, it keeps adding up over time. However, the supply-side gain doesn't all come out once. It takes years to build new infrastructure, and then businesses and consumers require years to adjust their behavior to the new capabilities. Moreover, the new infrastructure starts depreciating as soon as it is built. For purposes of this exercise, two scenarios are calculated: One which assumes it takes five years to hit the maximum productivity gains, and the other in which the combination of building time and behavioral adjustment means it takes 12 years until maximum productivity gains.

The next question is the appropriate horizon for the analysis. Conventional scoring uses a 10-year budget window. The fiscal year 2016 Budget Resolution,⁵ however, specifies that the Joint Committee on Taxation use a 20-year window for any analysis that it provides on major legislation. So, it is clear that any tax legislation will be scored over two decades. It is less clear what would happen to spending legislation. Our expectation is that if or when spending legislation receives a dynamic score, the Congress will be interested in an apples-to-apples comparison with tax policy and that the 20-year window will be used. Nevertheless, in the current exercise we present the analysis over both horizons.

Over the 20-year horizon, assuming a 5-year phase-in, the productivity impacts add up to a total gain in national output of \$85.5 billion and total federal tax revenue gain of \$17.1 billion. If it takes longer to get infrastructure projects finished and the adjustment process takes longer, then the total revenue offset is \$12.5 billion.

We can now combine the demand-side and supply-side revenue offsets. In an economy with slack and efficient implementation of infrastructure projects, a \$100 billion infrastructure

investment would add as much as \$165.5 billion to national output over the course of 20 years. As a result, the 20-year revenue offset for a \$100 billion infrastructure project would be as much as \$33.1 billion. In a full-employment economy where it takes longer to implement infrastructure projects, the 20-year national output gain would be \$62.5 billion and the revenue offset would be \$12.5 billion.

We did similar calculations for the 10-year budget window. In that case, the national output gain would range from \$7.5 billion to \$123.0 billion, while the potential revenue offset ranges from \$1.5 billion to \$24.6 billion. Note that infrastructure projects benefit greatly from dynamic scoring in the longer 20-year budget window, which reflects the long-lived nature of infrastructure investments.

Summary and Conclusions

We review recent trends in federal infrastructure spending and the policy case for dynamic scoring of revenue and spending legislation. The use of dynamic scoring depends upon the magnitudes of near-term impacts on economy-wide spending and the long-run impacts on productivity. We conclude that federal infrastructure investment should be dynamically scored. A simple example suggests that \$100 billion in new infrastructure spending could generate an extra \$62.5 to \$165.5 billion in national output over the next twenty years, taking the initial investment into account. Assuming a 20 percent effective tax rate, this \$100 billion infrastructure investment would generate a 20-year revenue offset ranging from \$12.5 to \$33.1 billion.

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Footnotes

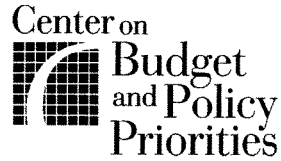
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House “Dynamic Scoring” Rule Likely Will Mean More Tax Cuts — Not More Information

By Chye-Ching Huang and Paul N. Van de Water

House Republicans plan to amend House rules this week to require the Congressional Budget Office (CBO) and Joint Committee on Taxation (JCT) to use “dynamic scoring” for official cost estimates of tax reform and other major legislation.¹ Under dynamic scoring, the official cost estimates would incorporate estimates of how legislation would affect the size of the U. S. economy and, in turn, federal revenues and spending. Incoming Ways and Means Committee Chairman Paul Ryan has said this change is designed simply to generate more information on the impact of proposed policies.² In reality, however, the House would be asking CBO and JCT for *less* information, not more, and the new rule could facilitate congressional passage of tax cuts that are revenue-neutral only on paper.

CBO and JCT already provide macroeconomic analyses of some proposed bills as a supplement to the official cost estimates they produce. These analyses typically present a *range of estimates* of the legislation’s impact on the economy.

The new House rule, in contrast, asks for an official cost estimate that only reflects a *single* estimate of the bill’s supposed impact on the economy and the resulting revenue impact. By incorporating additional revenue in the official cost estimate (as a result of an estimate of economic growth), this would enable lawmakers to write bills with deeper tax-rate cuts, or smaller offsetting curbs on tax breaks, than they otherwise could do.

The economic impact of even a well-designed tax reform plan is likely to be modest relative to the size of the U.S. economy. But the estimates of revenue gains from the plan’s estimated dynamic effects could be large in the context of current fiscal debates. Those estimates could also be highly dubious, depending on the models and assumptions used. For example, JCT estimated that the tax reform plan that former Ways and Means Chairman Dave Camp produced last year could generate between \$50 billion and \$700 billion of additional revenue over the decade through faster economic growth, with the \$700 billion estimate reflecting a series of very rosy assumptions — including the

¹ The proposed H. Res. 5 language is at <http://bit.ly/1xxwDso>.

² House Budget Committee Chairman Ryan, “The Need for Macroeconomic Analysis,” <http://1.usa.gov/1CVDMU1>, and “Macroeconomic Scoring Q&A,” <http://1.usa.gov/1vK6g3E>, December 15, 2014.

assumption that a future Congress will stabilize the debt as a share of gross domestic product (GDP) by approving large spending cuts that aren't part of the Camp bill. If highly optimistic economic and fiscal assumptions like these are included in official cost estimates but then fail to materialize, the result will be higher deficits and debt. And as CBO, JCT, and other analysts have warned, tax cuts that ultimately expand deficits can *slow* economic growth, rather than increase it, because the higher deficits can create a drag on saving and investment.

Proposed Rule Asks for Less Information, Not More

Lawmakers already have access to CBO and JCT analyses that provide the best available information on the economic effects of tax legislation. Current House rules require JCT to produce a macroeconomic impact analysis — including estimates of possible changes in economic output, employment, capital stock, and tax revenues — of legislation to amend the tax code.³ Congress can also request such analyses. CBO and JCT have produced them for a wide range of proposals.⁴

Because of the very large uncertainty involved in estimating how a piece of legislation will affect the economy, JCT and CBO have typically presented estimates from a number of different economic forecasting models, using a range of assumptions.⁵ These JCT and CBO analyses also carefully explain the many reasons why the estimates, which aren't factored into the legislation's official cost estimate due to their high degree of uncertainty, might be too high or too low.

The new House rule will no longer explicitly require JCT to provide analyses that set out its estimates of a tax bill's effect on economic output, employment, and the capital stock. Nor will the rule require CBO and JCT to provide a *range* of economic and cost estimates that reflect different models and assumptions. Instead, it will require CBO and JCT to incorporate into the official cost estimate for a piece of legislation — the estimate that would then be used to determine whether the bill complies with budget targets and limits — a *single* estimate of the bill's impact on economic output and revenues, chosen from the extensive range of uncertain effects the bill might have on economic output and budgetary costs.

Rule Could Ease Passage of Large Tax Cuts That End Up Swelling Deficits

Chairman Ryan has proposed large cuts in tax rates — including cutting both the top individual tax rate and the corporate tax rate to 25 percent — without offering specific ways to pay for them.⁶ The Camp tax reform plan, by contrast, included specific financing proposals, but it was not well received by other Republican lawmakers, who viewed its rate cuts as too modest and balked at various of its proposals to scale back or eliminate numerous tax breaks to help pay for the rate reductions.

³ House Rule XIII. If such an analysis is not calculable, there must be a statement from JCT explaining why.

⁴ For an array of JCT macroeconomic analyses, including those produced in compliance with the House rule that has been in effect until now, see <http://lusa.gov/LAJTNSc>.

⁵ See CBO, "How CBO Analyzes the Effects of Changes in Federal Fiscal Policies on the Economy," November 2014, pp. 2-3, <http://lusa.gov/LBkPWCO>. For a review of JCT and CBO's models and assumptions see Jane G. Gravelle, "Dynamic Scoring for Tax Legislation: A Review of Models," Congressional Research Service, January 24, 2014.

⁶ Chuck Marr, Chye-Ching Huang, and Nathaniel Frentz, "The Ryan Budget's Tax Cuts: Nearly \$6 Trillion in Cost and No Plausible Way to Pay for It," Center on Budget and Policy Priorities, March 17, 2013, <http://bit.ly/QCfiuW>.

Dynamic scoring could facilitate congressional passage of large rate cuts in tax reform by making the rate cuts appear — on paper — less expensive than under a traditional cost estimate. That’s because some of the models of the economy and related assumptions used to produce a dynamic cost estimate might show some tax reform packages boosting economic growth and thereby generating additional revenue. This effect wouldn’t be large enough to pay entirely for the package’s tax cuts (except under the most extreme and unrealistic models), but it might offset a significant part of the cost. By lowering the package’s official cost, dynamic scoring could create budgetary room for even deeper rate cuts or lessen the need for measures to offset the rate cuts’ cost. If tax legislation were enacted using a dynamic scoring estimate based on optimistic assumptions but the assumed “dynamic” revenues then failed to materialize, the legislation would add to deficits and aggravate the nation’s long-run fiscal challenges.

This contrasts sharply with current estimating practices, in which the potential revenue gains from economic growth aren’t included in a bill’s official cost estimate and thus can’t be used to make the legislation appear less expensive. Under the current rules, if a boost to the economy results from enacted legislation and produces lower deficits than estimated, the nation’s fiscal outlook improves, while if *no* economic boost occurs, deficits do not widen because extra revenue wasn’t assumed. The current rules are much safer and more prudent for the nation’s fiscal health, especially given that we already face long-term fiscal problems.

Until now, CBO and JCT have never included the highly uncertain growth effects of tax legislation in their official cost estimates precisely because the effects are so uncertain. Moreover, dynamic scoring is susceptible to manipulation through the selection of the specific model and assumptions to use, which heightens the risks of relying on it. These are compelling reasons why official cost estimates should not rely on the inherently questionable estimates that dynamic scoring produces.⁷

Rule Could Have Significant Impact

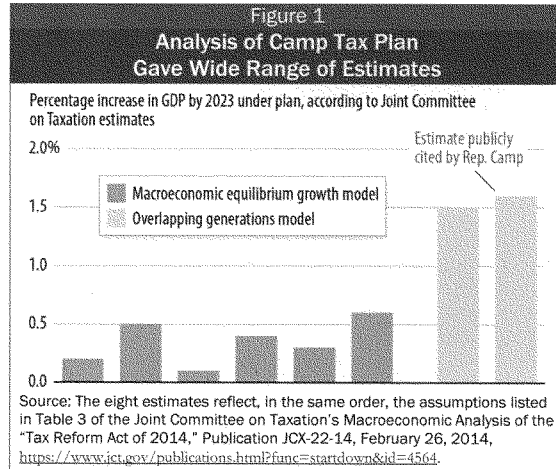
Even a well-designed tax reform proposal won’t likely deliver a large boost to the economy, relative to the economy’s size.⁸ But estimates of economic growth — and in particular, the resulting estimates of the “dynamic revenue effects” of tax reform — could be large in the context of current fiscal debates, especially if they are based on rosy assumptions.

For example, JCT’s analysis of Chairman Camp’s tax plan used two different economic models and an array of differing assumptions, resulting in eight separate estimates of macroeconomic effects. The range of the economic growth estimates was very wide (see Figure 1), as was the corresponding range of revenue estimates — from \$50 billion to \$700 billion in additional revenue over ten years.

⁷ Paul N. Van de Water and Chye-Ching Huang, “Budget and Tax Plans Should Not Rely on ‘Dynamic Scoring’: Estimates Are Highly Uncertain and Subject to Manipulation,” Center on Budget and Policy Priorities, updated November 17, 2014, <http://bit.ly/1qPVtcQ>.

⁸ See, for example, “Statement of Jane G. Gravelle before the Senate Budget Committee,” April 8, 2014, <http://1.usa.gov/1Afr2R7>.

It's instructive that in presenting and promoting his plan, Chairman Camp chose to highlight the \$700 billion estimate, which was based on highly unrealistic assumptions. It came from an "overlapping generations" model that assumed that future Congresses will act to stabilize the debt as a share of the economy and do so entirely through future spending cuts. For this reason, JCT cautioned that only the results of the *other* model that it used (the macroeconomic equilibrium growth or MEG model, which chairman Cap did *not* highlight) reflected Camp's "actual proposed law."⁹



Some observers might view \$700 billion over ten years as small if measured as a share of GDP over a decade. But it's a very substantial amount for budget debates; it is about equal to all of the revenues raised by the 2012 "fiscal cliff" deal. Even the much lower revenue estimates from the MEG model are sizeable in the context of today's budget debates.

It's unclear how JCT and CBO would produce a single estimate from their range of models and assumptions; averaging the results could create an estimate that's driven to a substantial degree by a highly unrealistic model (the "overlapping generations" model) that makes big, questionable assumptions about future congressional action. Whatever the approach, dynamic scoring could have a large impact on budget debates.

The proposed House rule is significant for other reasons as well. For example, it would effectively give House leaders the discretion to *use dynamic scoring only when it helps them*. While the new House rule would apply dynamic scoring to "major legislation" that has a fiscal impact of more than 0.25 percent of projected GDP, House leaders could easily render this standard meaningless by splitting up bills to avoid the threshold or combining proposals into larger bills to meet it.

Further, the rule would empower the chairs of the Budget and Ways and Means Committees to designate *any* bill as "major legislation," *regardless* of whether it meets the 0.25 percent of GDP threshold. Chairman Ryan has downplayed the impact of the rule change by stating that only three bills in the last Congress would have met the threshold for dynamic scoring.¹⁰ Yet that comment seems misleading; under the proposed rule, dynamic scoring could be applied to many more (or

⁹ JCT, Macroeconomic Analysis of the "Tax Reform Act of 2014," February 26, 2014, <http://lusa.gov/1E0n9rk>.

¹⁰ House Budget Committee Chairman Paul Ryan, "Macroeconomic Scoring Q&A," December 15, 2014, <http://lusa.gov/1vK6q3E>.

even fewer) bills — essentially, it could be deployed whenever House leaders find it politically useful.

In addition, the rule could lead to misleading mismatches between the cost estimates used for tax proposals and *distributional analyses* of those proposals that the House might separately request. As noted above, the economic growth and budgetary estimates that Chairman Camp touted of his tax reform plan came from a model that assumes future Congresses will take controversial deficit-reduction actions that policymakers have long resisted. Those estimates assumed not only that Congress will subsequently act to cut future deficits enough to stabilize the debt as a share of the economy, but also that *all* of this deficit reduction will come from cuts in transfer payments, a category that includes programs such as Social Security, unemployment insurance, and SNAP (formerly known as food stamps). Yet the distributional impacts that Chairman Camp relied on in presenting his bill *failed to include* any of these cuts in transfer payments, showing only the tax changes. The distributional analysis of his plan would have looked very different — and much less favorable — had it incorporated the cuts in benefit programs that Camp's favored dynamic scoring estimate assumed.

Conclusion

Congress should not avoid hard budgetary choices by giving itself the ability to use highly uncertain estimates of the potential growth effects of tax legislation in order to hide or minimize the revenue losses that JCT otherwise would show the tax legislation as producing. Current estimating practices exclude these effects *precisely because* they are so uncertain and subject to manipulation.

Moreover, by requiring CBO and JCT to count these “dynamic” effects in their official cost estimates, the House rule doesn't ask for more information, as some of its proponents claim — rather, it allows lawmakers to use a single highly uncertain estimate in order to cut tax rates more deeply or curb tax breaks less substantially (or both) than they otherwise could do without facing criticism for adding to deficits and possibly violating key budget rules. For example, congressional budget rules prohibit budget reconciliation bills from increasing deficits in future decades, a requirement that dynamic scoring could be used to help circumvent.

In short, dynamic scoring could make it easier for Congress to fashion a tax reform package that *appears* revenue neutral, on the basis of questionable and uncertain growth estimates. If those effects then failed to materialize, the increased deficits would worsen the nation's long-run fiscal problems and, in so doing, could actually create a drag on future economic growth, as CBO and JCT have explained.¹¹

¹¹ JCT and CBO analyses have shown that tax cuts that are not paid for can ultimately lower long-term growth. See, for example, Douglas W. Elmendorf, Director, CBO, “The Economic Outlook and Fiscal Policy Choices,” Testimony before the Senate Committee on the Budget, September 28, 2010, <http://1.usa.gov/1zNid4x8>; and JCT, “Macroeconomic Analysis of H.R. 2, the Jobs and Growth Reconciliation Tax Act of 2003,” May 8, 2003, <http://1.usa.gov/1xvCvR7>.

QUESTIONS FOR THE RECORD FOR DR. JOHN DIAMOND FROM REPRESENTATIVE
CAROLYN B. MALONEY, RANKING MEMBER

1. The Joint Committee on Taxation (JCT) used 8 different dynamic scoring models to estimate the possible revenue effects of Rep. Camp's tax reform proposals. These models predict that the proposal could generate \$50, \$100, \$150, \$200, \$225, \$275, \$650 or \$700 billion of additional revenue from macroeconomic feedbacks over 10 years.

It has been suggested at the hearing that five of these are "routine static scoring" models. Is that correct?

To begin with, JCT refers to its normal scoring method as a "conventional" revenue estimate not a static estimate. Given that, no it is not correct.

JCX-22-14 states the following:

"The proposal is projected to result in increases in economic activity relative to that projected under present law, as measured by changes in real GDP. The increase in projected economic activity is projected to increase revenues relative to the conventional revenue estimate by \$50 to \$700 billion, depending on which modeling assumptions are used, over the 10-year budget period."

Thus, all of the estimates are from macroeconomic analysis of TRA 2014. These estimates suggest that a conventional revenue estimate would be wrong by a minimum of \$50 billion and by as much as \$700 billion. Taking one of the middle estimates of \$200 to \$225 billion would be a reasonable number to use for dynamic scoring purposes.

Diamond and Zodrow (2014) also examined the effects of a proposal similar to TRA 2014, which was prepared for the Business Round Table. They found that the most important factor is the reduction in income shifting as the corporate income tax rate declines. In addition, other important factors include the move to territorial, the more efficient allocation of capital, and the reallocation of FSK. Diamond and Zodrow found that a proposal similar in structure to TRA 2014 would increase GDP by 1.2 percent after five years, by 2.2 percent after 10 years, and by 3.1 percent in the long run. The long-run increase in GDP is primarily driven by a 5.0 percent increase in the ordinary capital stock and a 0.3 percent increase labor supply. In the long run, a 57 percent reduction in income shifting allows the corporate income tax rate to decline an extra 5 percentage points (relative to the Camp proposal) to 19.9 percent (which is the only difference in the proposal simulated and TRA 2014).

2. Dynamic scoring yields widely different results depending on the model that is used and the assumptions on which the calculations are based. During the hearing, you conceded that "We can't produce a single number."

This problem is especially clear in the case of the Camp proposal—the results of JCT models ranged from \$50 billion to \$700 billion. The larger estimate—the one Camp cited—is 14 times larger than the smallest one.

Nevertheless, Congress has passed a rule that requires JCT to provide a single result. Policymakers will rely on this figure to make decisions that could have enormous impact on our economy and our budget.

If you believe "we can't produce a single number," what are the justifications for including these highly uncertain results in the official score as a single number, rather than as a range of estimates for advisory purpose in the conventional approach?

I firmly believe that we can produce a single number, however this should not be the primary or sole goal of dynamic analysis. My statement in the hearing ("we can't produce a single number") was simply a misstatement, which I have asked to be corrected for the final record. My belief is that we should not only produce a single estimate, but should examine a range of estimates to inform policymakers before arriving at a dynamic score (a single estimate). Note that conventional estimation also requires modelers to make assumptions and to pick a single number from a range of possible estimates. As I stated in my spoken and written testimony, there is substantial uncertainty in conventional estimates. CBO routinely shows the significant uncertainty that is contained in conventional estimates from policy uncertainty, economic uncertainty, parameter uncertainty, as well as uncertainty related to the economic effects of policy enactment. For TRA 2014, simply assuming that there is no economic effect of the policy, even though the estimated range is from \$50 to \$700 billion, is also precisely wrong. Note that zero is a single number estimate!

The justification for including dynamic effects is to more accurately account for the cost of various proposals. This is especially important for policies that have negative economic effects, that are debt financed, or that create large distortions. In addition, dynamic analysis could play a critical role because budget gimmicks within the budget window can often obscure the long-run effects of policies, especially policies that are debt-financed, temporary, or delayed and introduced late in the budget window. Ignoring the dynamic effects would continue to allow the magnitude of the revenue effects of many policies to be overstated and thus likely to lead to additional debt. Note that huge deficits have occurred under a budget framework based on conventional estimates, at least in part because such a framework does not account for the true cost of competing policies.

For example, consider two hypothetical proposals. The first proposal raises \$200 billion in revenue by taxing capital gains and dividends and increases tax expenditures by \$200 billion by expanding child tax credits. The second proposal would raise \$200 billion by reducing child tax credits and reduce revenues by \$200 billion by lowering capital gains and dividend tax rates. The conventional estimates would view these two proposals as equivalent from a budget perspective (with some small differences showing up to account for certain timing effects). However, the above analyses clearly show that the first proposal would decrease economic growth and cause an increase in deficits, while the second would increase economic growth and lead to deficit reduction if no other policy actions were taken. It is important that we account for such differences in the policymaking process.

3. During the hearing, Senator Phil Gramm dismissed Mr. Buckley's assertion that one particular dynamic scoring model would force CBO and JCT to predict what a future Congress might do. Senator Gramm said that "Anybody that would do that is a moron, because Congress talks and doesn't act."

Do you see any problems in using a dynamic scoring model that assumes how and when a future Congress will act to finance the deficit?

As I stated in the hearing, this is an important but extremely misunderstood issue. It is widely recognized that under the current law baseline U.S. fiscal policy is unsustainable. Let's start by thinking about the effects of including various assumptions in dynamic models.

Within the budget window (the next 10 years), the effects are not important. Current CBO projections show the debt to GDP ratio increasing from 74 to 78 percent over the next 10 years. Failing to account for such a difference in the baseline would not have a discernable impact on the economic effects of enacting various policy alternatives. The modelers can test this by running the policy change at both debt levels. In the end, modelers can choose to use an average level of debt in the model (e.g., 76 percent). In any case, the differences of such assumptions would almost certainly be no more than a rounding error in most cases.

In the long run, this assumption is more important. If you use a model that allows for the enactment of an unsustainable fiscal policy, then you must be keenly aware of when the model starts to diverge and eventually it will fail to solve mathematically. During the divergence process, the model will likely produce spurious results. This is important to keep in mind when using such a model. In this case, assuming current law (note that many commentators argue this is NOT the most likely policy outcome, which is one reason CBO started producing an estimate of current policy) requires the modeler to model turning points in the economy (movements from booms to busts and busts to booms are much more uncertain than predicting trend level growth) and the effects of economic default. This is extremely difficult and would add needless uncertainty to the process.

I do not see a significant issue with using a model that does not allow for unsustainable fiscal policies in the baseline. In fact, I believe this is a major advantage in one respect because it allows modelers to ignore the future actions of policymakers, which are likely unknowable, without having to model the effects of defaulting on government debt. More importantly, in terms of measuring the economic effects of policy changes, assuming away these large uncertainties leads to more moderate projections (note that most critics, and especially Mr. Buckley, are wildly confused on this issue). A basic tenant of economics is that the excess burden or dead-weight loss of a tax increases with the square of the tax rate (that is, distortions increase exponentially with increases in the tax rate). So the positive economic effects from a tax rate reduction from an initially high tax rate (such as those predicted in the U.S. under the unsustainable current law baseline) would be much larger than a tax rate reduction from a lower tax rate (those used in models that ignore the unsustainable nature of current law). So assuming a baseline that assumes taxes and spending are maintained at current levels as a percentage of GDP

are likely to moderate the predicted effects of tax policy changes. It is my expert opinion that this is a desirable feature of an economic model used to predict the effects of policy changes well into the future.

There is another issue concerning the choice of fiscal offsets for policies that are being examined. This is an important issue, however the professional and knowledgeable staffs of the relevant committees are more than capable of managing these issues.

Do you see any problems in using a dynamic scoring model that assumes that every American who wants a job will be able to find one?

Absolutely not in the long run, and I do not think it is necessary to worry about this problem in the short run as policymakers are already incentivized to think about these issues in the short run. In general, prices adjust to clear markets in the long run. If there is excess demand for labor, then wages would be bid up. As wages rose labor demanded would fall and labor supplied would rise. If there is excess supply, then wages would be bid down. As wages fall labor demanded would increase and labor supplied would decrease. While there can be periods of disequilibrium (such as the period after the 2008 financial crisis), I am confident policymakers will continue to respond with various short-term stabilizing policies during such periods (i.e., policymakers are often overly incentivized to focus on short run issues). But such increases in unemployment are temporary and thus should not be the focus of trying to determine the long run effects of policies. This is a widely held view. For example, CBO (2014, p. 110) states in the 2014 Long Term Budget Outlook that

“In its economic benchmark, CBO projects that real gross domestic product will grow fairly quickly over the next few years, reflecting a recovery in aggregate demand. Thereafter, real GDP is projected to grow at a pace that reflects increases in the capital stock, productivity, and the supply of labor.”

Thus, this states that in the long run CBO assumes that everyone that wants a job will find a job. In addition, note that the Board of Governors of the Federal Reserve is contemplating an interest rate increase this fall at least partly because they see the labor market returning to the full employment level (note that even in a fully employed labor market there is still unemployment as some unemployment is “frictional”).

I do not believe long-term tax and spending policies should be based on short run fluctuations in unemployment. Dynamic analysis should be geared to adopting policies that maximize long run economic growth. Thus, full employment models can and should be used to examine the effects of tax and spending policies that are being adopted to encourage long-run economic growth. There may be times when using short-run models capable of examining the economic effects of policy changes in markets that are not in equilibrium may be important, and at that time those models should be used. But I don’t believe we should adopt long run policy on short run considerations.

4. At the hearing, you argued that “What we need is a model that has predictive power, not a model that looks like the real world. What we want is to predict things accurately.”

What empirical evidence could you provide to substantiate your claim that these dynamic scoring models “predict things accurately?” Can you please provide a list of peer-reviewed articles in reputable journals that prove that these dynamic scoring models accurately predict the revenue effects of tax cuts?

These models have been widely used and accepted by many in the private sector, academics, and government. A great starting place to answer your question is the Handbook of Computable General Equilibrium Modeling, edited by Peter B. Dixon and Dale W. Jorgenson, published by Elsevier (the most prestigious handbook series). Of course, my favorite chapter is Chapter 11 by Diamond and Zodrow. The entire volume is a great starting place to learn about the value of computable general equilibrium modeling. Also, as stated in the hearing, economic models are widely used across a wide range of government and private institutions—it is well overdue for Congress to start using these resources to make better policy decisions.

QUESTION FOR THE RECORD FOR MR. BUCKLEY FROM REPRESENTATIVE CAROLYN B. MALONEY, RANKING MEMBER

1. Given your analysis of the flaws of dynamic scoring models and also given the fact that Congress has already adopted rules that require a single dynamic score of large (tax) bills, would you recommend Members of Congress to advocate dynamic scoring of both tax cuts and discretionary spending? Are there any assumptions in the dynamic scoring models that would bias against spending bills? Are there any other potential pitfalls that policymakers should be aware of?

If dynamic scoring is appropriate for large tax bills, I believe that it is also appropriate for scoring major legislation that involves spending on investments, such as infrastructure, research and development, and education. Those investments provide substantial benefits for our economy, benefits perhaps more certain than the often predicted, but never realized, supply-side benefits of marginal rate reductions. Without adequate infrastructure or an educated workforce, the United States will not remain competitive in the world economy.

Also, if the scoring rules differ, there will be the temptation to move spending programs into the tax laws where dynamic scoring would be available. I assure you that spending through tax legislation is not difficult to accomplish.

Unfortunately, current dynamic scoring models substitute assumptions for analysis, and those assumptions are biased against Federal spending, even needed spending such as investments on transportation and other infrastructure.

For example, CBO assumes that the return on public investments will be 50 percent of the return on private investments. They cite no evidence for that assumption, but merely note that assumption is halfway between zero used by some modelers and 100 percent used by some others. Under their assumption, increased spending on public infrastructure could be seen as negative for economic growth, something that we know is not true.

